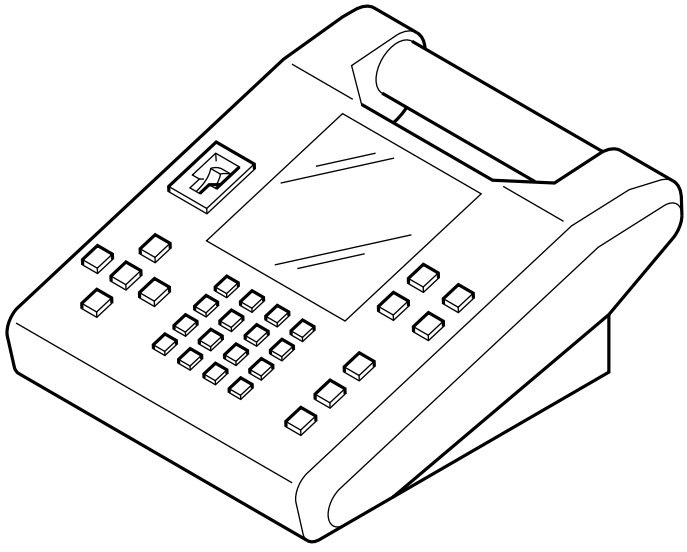
SERVICE MANUAL

JumboTron

MODEL	DEST.
JME-UA200	World



UNIT ALIGNMENT CONTROLLER

SONY

⚠ WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injuly, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

WARNING!!

AN INSULATED TRANSFORMER SHOULD BE USED DURING ANY SERVICE TO AVOID POSSIBLE SHOCK HAZARD, BECAUSE OF THE LIVE CHASSIS.
THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY A ⚠ MARK ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION!!

AFIN D'EVITER TOUT RISQUE D'ÉLECTROCUTION PROVENANT D'UN CHÂSSIS SOUS TENSION, UN TRANSFORMATEUR D'ISOLEMENT DOIT ETRE UTILISÉ LORS DE TOUT DÉPANNAGE.
LE CHÂSSIS DE CE RÉCEPTEUR EST DIRECTEMENT RACCORDÉ Á L'ALIMENTATION SECTEUR.

ATTENTION AUX COMPOSANTS RELATIFS ÁLA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES SCHÉMAS DE PRINCIPE, LES VUES EXPLOSÉES ET LES LISTES DE PIECES SONT D'UNE IMPORTANCE CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT. NE LES REMPLACER QUE PAR DES COMPOSANTS SONY DONT LE NUMÉRO DE PIÉCE EST INDIQUÉ DANS LE PRÉSENT MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

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SONY

3-864-807-**11 (1)**

JumboTron Unit Alignment Controller

Operating Instructions
Before operating the unit, please read this manual thoroughly and retain it for future reference.

JumboTron

JME-UA200

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SECTION 1
OPERATING INSTRUCTIONS

This section is extracted from operation manual.

Sony Corporation Printed in Japan

Owner's Record
The model and serial numbers are located on the rear. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. JME-UA200 Serial No. _____

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

For the customers in the U.S.A.
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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About This Manual

This instruction manual is mainly aimed at the maintenance/service personnel.
It explains how to use the JME-UA200 unit alignment controller, which is used to adjust and inspect the JumboTron display units of the JumboTron system.

Precautions

On safety

- Do not forcibly bend the power cord. Do not place or drop any heavy object on it. If the power cord has been damaged, a fire or electric shock hazard may occur.
- To disconnect the power cord, pull it out by the plug. Never pull the cord itself.
- Do not use a damaged power cord.
- Do not drop any liquid or solid object into the cabinet.

On cleaning

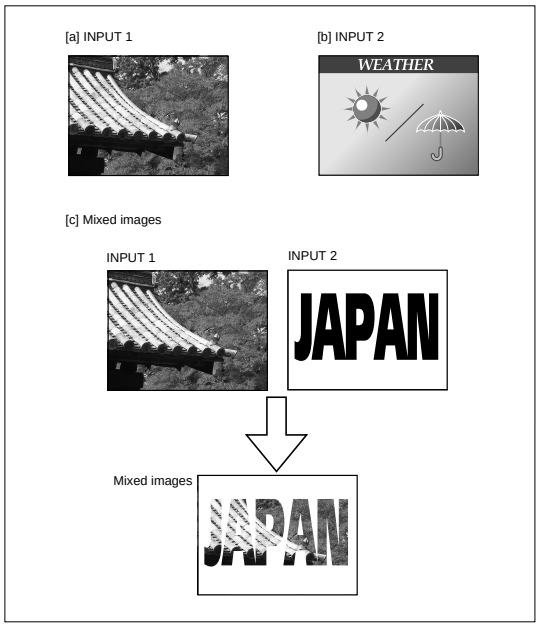
- Clean the case and front panel with a dry soft cloth, or a soft cloth slightly moistened with a mild detergent solution. Do not use any organic solvents, such as alcohol or benzine which might damage the finish.
- Be sure to unplug the unit before cleaning.

Overview of the JumboTron System

The JumboTron system displays video images on a large screen (JumboTron screen) located either outdoors or indoors. Images from video sources such as a VCR, video camera and computer can be displayed on the screen.
The JumboTron system provides superb bright images with high resolution, regardless of whether it is day or night, indoors or outdoors.

Images to be displayed on the JumboTron screen

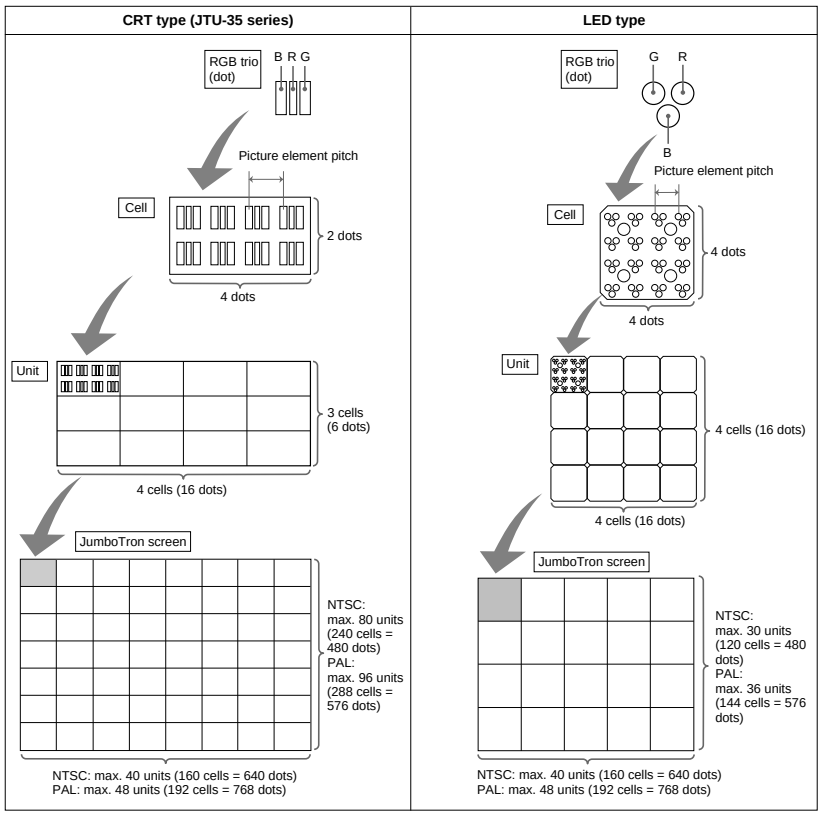
The JumboTron system can display the following three types of images:
[a] Video images input from equipment such as a VCR, video camera and video disc (INPUT 1)
[b] Computer graphics (INPUT 2)
[c] Mixed images of INPUT 1 and INPUT 2
(INPUT 1 images are superimposed on the monochrome area of INPUT 2 images.)



Overview of the JumboTron System

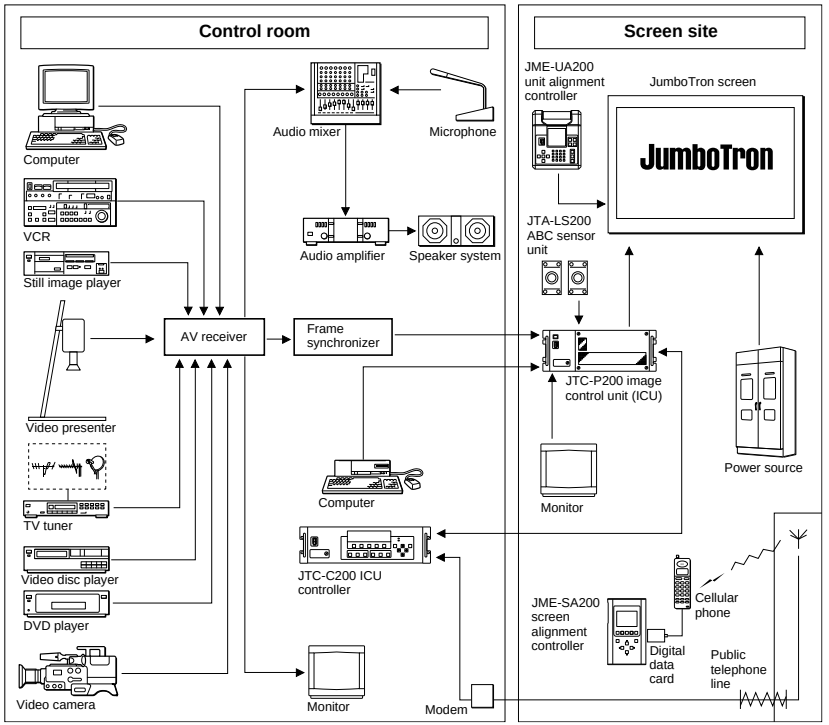
Structure of the JumboTron screen

Two types of the JumboTron screen are available. One is the conventional CRT type screen in which light emitting bodies of three primary colors (R, G and B), "Trinilite," are used as the light emitting element. The other is the new LED type screen in which light emitting diodes of the three primary colors are used.
The basic element of the JumboTron screen is an RGB trio (dot).
A "cell" consists of the dots arranged at a certain interval (picture element pitch) and a "unit (JumboTron display unit)" consists of 12 cells for the CRT type and 16 cells for the LED type.
There are three unit types, the JTU-35 series (with 35-mm picture element pitch) and JTU-17 series (with 17.5-mm pitch) of the CRT type, and the LDU-15 series (with 15-mm pitch) of the LED type. You can configure a large JumboTron screen by arranging the JumboTron display units vertically and horizontally to suit various uses or locations.


CRT type (JTU-35 series)
LED type
RGB trio (dot)
B R G
G R
B
Picture element pitch
Cell
2 dots
4 dots
Unit
3 cells (6 dots)
4 cells (16 dots)
JumboTron screen
NTSC: max. 80 units (240 cells = 480 dots)
PAL: max. 96 units (288 cells = 576 dots)
NTSC: max. 30 units (120 cells = 480 dots)
PAL: max. 36 units (144 cells = 576 dots)
NTSC: max. 40 units (160 cells = 640 dots)
PAL: max. 48 units (192 cells = 768 dots)

Configuration of the JumboTron system

The following is the suggested configuration of the JumboTron system.



Features

The JME-UA200 unit alignment controller is designed to adjust the luminance of a JumboTron display unit, cell or pixel and to check their operations.
The main functions of the JME-UA200 are as follows:

Eleven types of test signals
The built-in test signal generator of the controller displays eleven types of test signals, allowing you to check various circuits and functions of a JumboTron display unit.

Luminance adjustment of a cell and pixel as well as the whole unit
You can specify a cell or pixel (a single light emitting element of R, G and B) which composes a JumboTron display unit and adjust its luminance. This allows you to obtain luminance uniformity of the whole screen.

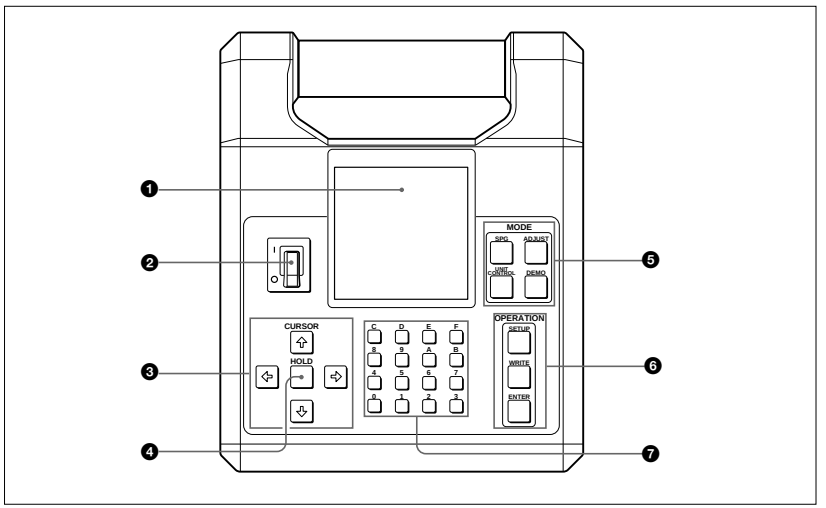
Automatic luminance adjustment
After measuring the data of a cell which is emitting light correctly using a sensor (not supplied), you can adjust other cells automatically to the same data as the correct cell.

Function check of a JumboTron display unit
You can check whether a JumboTron display unit is operating properly, or check the current conditions of a unit.

Demonstration
The controller can display a test signal automatically on a small screen, which is a combination of several units (up to 16 units), for a demonstration.

Locations and Functions of Parts and Controls

Front panel



❶ Display window

❷ POWER ON/OFF switch
Turns the unit alignment controller on or off.

❸ CURSOR ⇧/⇩/⇨/⇦ buttons
Move the cursor of the menu in the display window or change the data.

❹ HOLD button
Confirms the selected unit, cell or pixel to be adjusted.

❺ MODE select buttons
SPG (Signal Pattern Generator) button: Displays a test signal on a JumboTron display unit. You can select and display the desired signal among eleven signals; WHITE, BLUE, RED, GREEN, STAIR STEP, COLOR BAR-V (vertical color bar), COLOR BAR-H (horizontal color bar), CHARACTERS, BEAM BLANKING, TEST and RASTER.

ADJUST button: Adjusts the luminance of a JumboTron display unit.

UNIT CONTROL button: Checks the functions of a JumboTron display unit.

DEMO (demonstration) button: Used for the demonstration function.

❻ OPERATION buttons
SETUP button: Changes the on-screen menu in the display window.

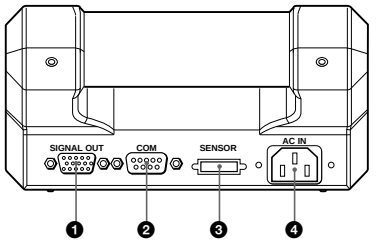
WRITE button: Stores the adjusted data into memory when adjusting the luminance manually.

ENTER button: Confirms the data value input with the numeric buttons, or executes a specified operation.

❼ Numeric buttons
Inputs the data in hexadecimal.

Locations and Functions of Parts and Controls

Rear panel



❶ SIGNAL OUT connector (D-sub 15-pin)
Connect a JumboTron display unit to be adjusted.

❷ COM connector (D-sub 9-pin)
Connect a computer to display the data for demonstration.

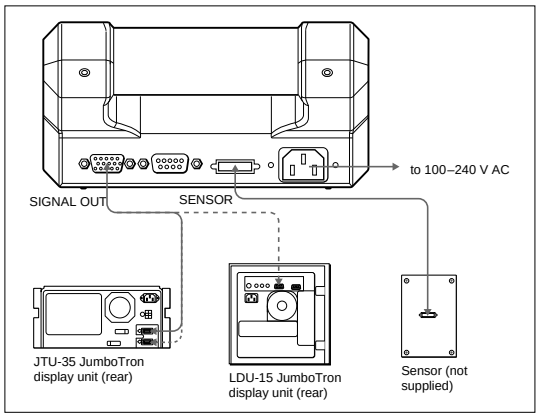
❸ SENSOR connector (Half-pitch 20-pin)
Connect a sensor (not supplied).

❹ AC IN connector
Connect the AC power supply of 100–240 V. Use the supplied AC power cord which fits the AC outlet in your area.

Connections

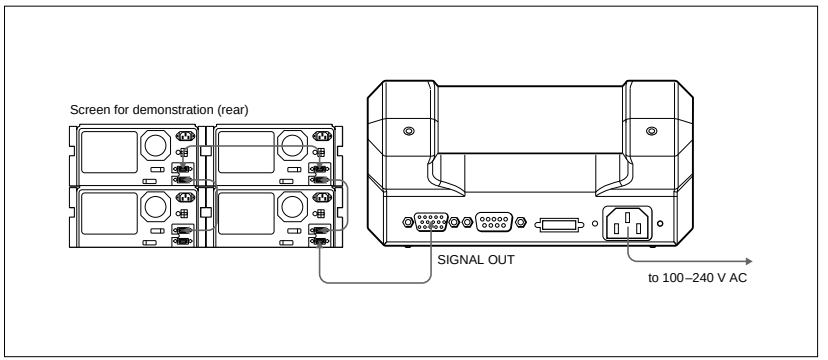
Connecting a JumboTron display unit

Connect a JumboTron display unit to the SIGNAL OUT connector. When measuring the luminance or making an automatic luminance adjustment, connect a sensor (not supplied) to the SENSOR connector. Be sure to turn off the power of the controller before connecting the sensor.



Connecting several JumboTron display units

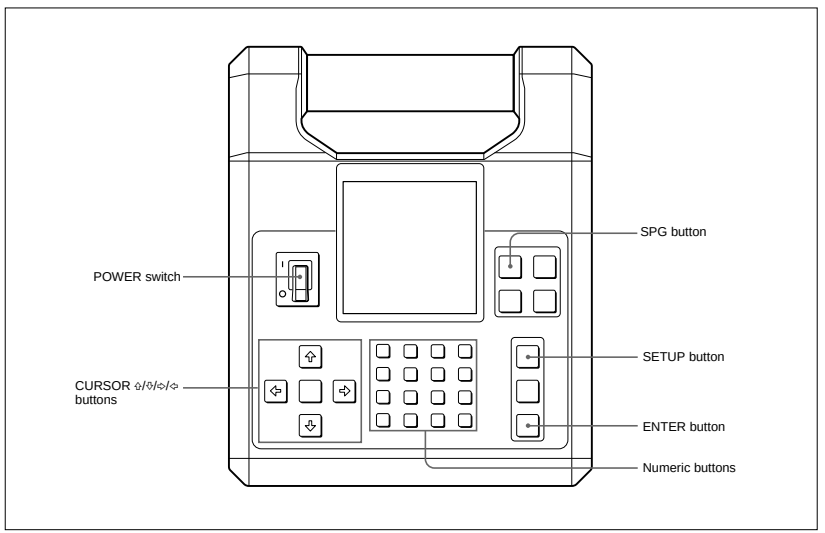
You can combine several units as a small screen and connect them to the controller for a simple demonstration. Press the DEMO button on the controller to perform demonstration. Up to 16 units can be connected.



Displaying a Test Signal on a JumboTron Display Unit

You can display eleven types of test signals on a JumboTron display unit. Use this mode to clear the cause of the malfunctions of a unit or to check the operation of a unit, cell or pixel after replacing or adjusting it.
After selecting the type of the test signal, you can specify precisely the luminance, brightness, scroll speed and color bar width of each test signal. The types of the test signals and their functions are described below.

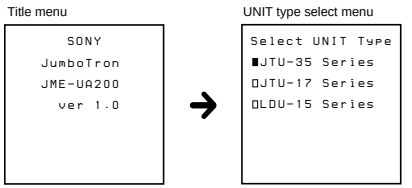
Type of test signal		Operations and circuits to be checked
WHITE	White signal	Uniformity of pixel light emission, etc.
BLUE	Blue signal	
RED	Red signal	
GREEN	Green signal	
STAIR STEP	Uniform bit signal	Bit errors, etc.
COLOR BAR-V	Vertical color bar signal	Timing of data latch, etc.
COLOR BAR-H	Horizontal color bar signal	
CHARACTERS	Character signal	
BEAM BLANKING	Pattern with alternate line blanking	Cathode switching circuit
TEST	Scrolls all the test signals.	All-round check of a JumboTron display unit or a cell
RASTER	Adjusts the luminance of red, green and blue, separately in the range of 256 levels.	Characteristics of pixel light emission, etc.



1 Selecting the test signal to be displayed

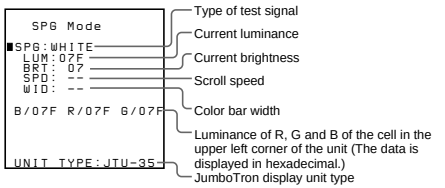
1 Set the POWER switch to ON.

The title menu appears in the display window, then the display changes to the UNIT type select menu.



2 Press the ⇧ or ⇩ button to select the type of the JumboTron display unit, and press the ENTER button.

3 Press the SPG button.

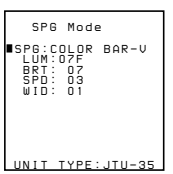


4 Select the signal to be displayed with the ⇨ or ⇦ button or the 0 to A numeric buttons.

The test signal mode changes in the following order each time you press the ⇨ button. (Pressing the ⇦ button changes the mode in the reverse order.) You can also select the test signal mode by pressing the button in brackets.

WHITE [0] → BLUE [1] → RED [2] → GREEN [3] → STAIR STEP [4] → COLOR BAR-V [5] → COLOR BAR-H [6] → CHARACTERS [7] → BEAM BLANKING [8] → TEST [9] → RASTER [A] → WHITE [0]

Example: Selecting COLOR BAR-V by pressing ⇨ or ⇦ button or numeric button 5.



5 Press the ENTER button.

The selected test signal is displayed on the JumboTron display unit.

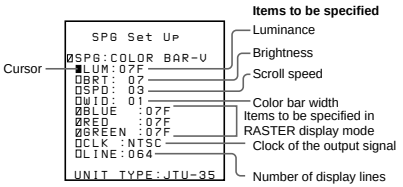
(Continued)

2 Specifying the luminance, brightness, scroll speed and color bar width of the selected test signal

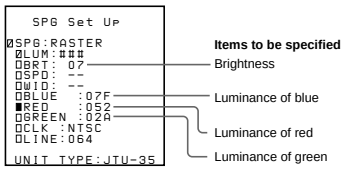
Specify after displaying the test signal on the JumboTron display unit by steps 1 to 5 above.

6 Press the SETUP button.

The items to be specified and their current data (in hexadecimal) appear in the display window.



When you select RASTER in step 4, the following display appears.

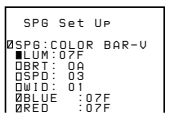


7 Select the item to be specified with the ⇧ or ⇩ button.

8 Change the data by pressing the ⇨ or ⇦ button or the numeric buttons.

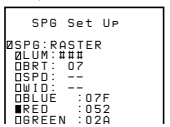
- Each time you press the ⇨ button, the level increases by 1, and pressing the ⇦ button decreases the level.
- You can also change the level by pressing the numeric buttons that correspond to its level (for example, press 0, 7 and F to set the level to 7F).

Example: Setting LUM (luminance) to 7F.



Note

There are some items that cannot be specified according to the test signals. The cursors of these items are shown as "Ø", and the levels of the data are shown as "– –" or "###".



Items to be specified

Items	Adjustable range	
	JTU-35, JTU-17	LDU-15
LUM (Luminance)	256 levels in the range from 00 to FF	1024 levels in the range from 000 to 3FF
BRT (Brightness)	16 levels in the range from 00 to 0F	16 levels in the range from 00 to 0F
SPD (Scroll speed)	00: Scrolls with each press of the ENTER button 01: Scrolls at every 1/60 seconds 02: Scrolls at every 1/3 seconds 03: Scrolls at every second 04: Scrolls at every 2 seconds 05: Scrolls at every 4 seconds	
WID (Vertical or horizontal color bar width)	01: 1 line [1)] 02: 2 lines 03: 4 lines 04: 8 lines 05: 16 lines 06: 32 lines	
BLUE (Luminance of blue in RASTER display mode)	256 levels in the range from 000 to 0FF	1024 levels in the range from 000 to 3FF
RED (Luminance of red in RASTER display mode)	256 levels in the range from 000 to 0FF	1024 levels in the range from 000 to 3FF
GREEN (Luminance of green in RASTER display mode)	256 levels in the range from 000 to 0FF	1024 levels in the range from 000 to 3FF
CLK (Clock of the output signal)	Output timing with the NTSC or PAL signal	
LINE (Number of display lines)	016: output signal with 16 lines 064: output signal with 64 lines 128: output signal with 128 lines 256: output signal with 256 lines	

- If you change the CLK setting while the JumboTron display unit is in operation, the unit cannot receive the signal from this controller. In this case, disconnect the unit, then turn on back the power of the unit.
- If you increase the number of display lines with SPD (scroll speed) set to 01, the JumboTron display unit cannot receive the signal from the controller correctly. If you want to increase the scroll speed, specify the less number of display lines.

1) Line
The width of one line of the color bar is 1 dot (a set of R, G and B). Therefore, if you set a color bar width to 03 (4 lines), the color bar width is 4 dots.

Adjusting the Luminance Manually

This section explains how to adjust the luminance manually in accordance with the menu in the display window. You can adjust the luminance each of the unit, cell and pixel[1], allowing you to obtain uniform luminance of the whole screeen.
There are eleven manual modes for each type of the JumboTron display unit.

JTU-35

Adjustment mode	Adjustment
PWM[2]-White	Changes the luminance level of white (three colors simultaneously)
PWM-Blue	Changes the luminance level of blue in white display
PWM-Red	Changes the luminance level of red in white display
PWM-Green	Changes the luminance level of green in white display
G1-VOLTAGE*	Changes the luminance level of each cell in white display by changing the voltage applied to the cell
PWM-Blue (B)	Changes the luminance level of blue in blue display
PWM-Red (R)	Changes the luminance level of red in red display
PWM-Green (G)	Changes the luminance level of green in green display
G1-VOLTAGE (B)*	Changes the luminance level of each cell in blue display by changing the voltage applied to the cell
G1-VOLTAGE (R)*	Changes the luminance level of each cell in red display by changing the voltage applied to the cell
G1-VOLTAGE (G)*	Changes the luminance level of each cell in green display by changing the voltage applied to the cell

* The luminance levels of blue, red and green are changed simultaneously in any of G1-VOLTAGE modes. You cannot adjust three colors separately.

JTU-17

Adjustment mode	Adjustment
G1V-White	Changes the luminance level of white (three colors simultaneously) for each pixel in white display by changing the voltage applied to the cell
G1V-Blue	Changes the luminance level of blue for each pixel in white display by changing the voltage applied to the cell
G1V-Red	Changes the luminance level of red for each pixel in white display by changing the voltage applied to the cell
G1V-Green	Changes the luminance level of green for each pixel in white display by changing the voltage applied to the cell
REF-VOLTAGE*	Changes the standard voltage applied to each cell in white display
G1V-Blue (B)	Changes the luminance level of blue for each pixel in blue display by changing the voltage applied to the cell
G1V-Red (R)	Changes the luminance level of red for each pixel in red display by changing the voltage applied to the cell
G1V-Green (G)	Changes the luminance level of green for each pixel in green display by changing the voltage applied to the cell
REF-VOLTAGE (B)*	Changes the standard voltage applied to each cell in blue display
REF-VOLTAGE (R)*	Changes the standard voltage applied to each cell in red display
REF-VOLTAGE (G)*	Changes the standard voltage applied to each cell in green display

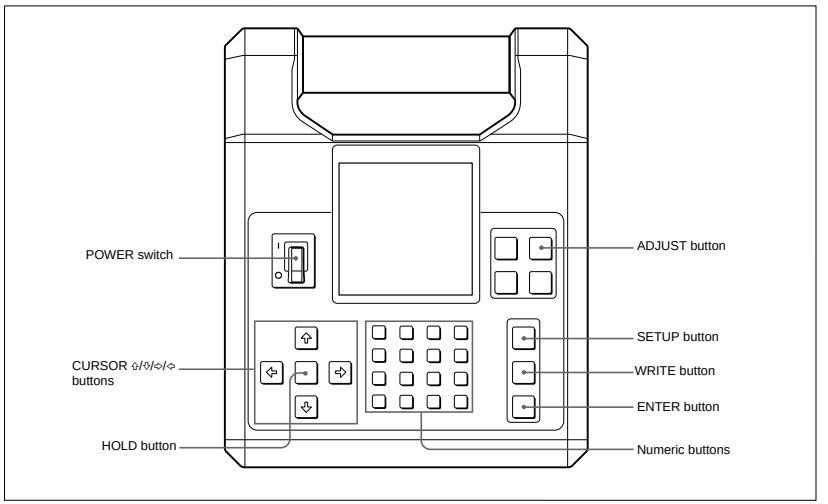
* Do not change the REF-VOLTAGE settings. If you have changed, then set the REF-VOLTAGE levels to 00.

1) Pixel
The smallest element of the light emitting body of the JumboTron screen. Each of R, G and B elements which makes up a trio is called a pixel.

2) PWM
Abbreviation for Pulse Width Modulation.
The JumboTron display unit changes the light emitting time of each color by adjusting the pulse width of the basic clock in order to change the luminance level.

LDU-15

Adjustment mode	Adjustment
If-White	Changes the luminance level of white (three colors simultaneously) in white display
If-Blue	Changes the luminance level of blue in white display
If-Red	Changes the luminance level of red in white display
If-Green	Changes the luminance level of green in white display
If-Range	Changes the luminance range of white (three colors simultaneously) in white display
If-Blue (B)	Changes the luminance level of blue in blue display
If-Red (R)	Changes the luminance level of red in red display
If-Green (G)	Changes the luminance level of green in green display
If-Range (B)	Changes the luminance range of blue in blue display
If-Range (R)	Changes the luminance range of red in red display
If-Range (G)	Changes the luminance range of green in green display



1 Selecting the manual adjustment mode

1 Set the POWER switch to ON.

The title menu appears in the display window, then the display changes to the UNIT type select menu.

Title menu

```
SONY
JumboTron
JME-UA200
ver 1.0
```

→

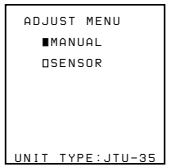
UNIT type select menu

```
Select UNIT Type
■JTU-35 Series
□JTU-17 Series
□LDU-15 Series
```

(Continued)

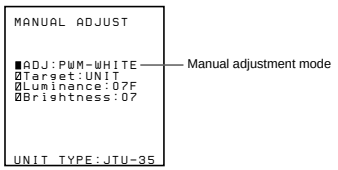
2 Press the ⇳ or ⇳ button to select the type of the JumboTron display unit you are using, then press the ENTER button.

3 Press the ADJUST button.



4 Select MANUAL with the ⇳ or ⇳ button, and press the ENTER button.

The controller enters manual adjustment mode.



5 Select the manual adjustment mode with the ⇨ or ⇦ button, or the 0 to A numberic buttons.

The mode changes in the following order each time you press the ⇨ button. (Pressing ⇦ button changes the mode in the reverse order.)
You can also select the mode by pressing the button in brackets. When you select the mode marked with an asterisk (*), use the buttons in brackets.

JTU-35

PWM-White [0] → PWM-Blue [1] → PWM-Red [2] → PWM-Green [3] → G1-VOLTAGE [4]
↑ PWM-Green (G) [7] ← PWM-Red (R) [6] ← PWM-Blue (B) [5] ←

* G1-VOLTAGE (G) [8], * G1-VOLTAGE (R) [9], * G1-VOLTAGE (B) [A]

JTU-17

G1V-White [0] → G1V-Blue [1] → G1V-Red [2] → G1V-Green [3] → REF-VOLTAGE [4]
↑ G1V-Green (G) [7] ← G1V-Red (R) [6] ← G1V-Blue (B) [5] ←

* REF-VOLTAGE (B) [8], * REF-VOLTAGE (R) [9], * REF-VOLTAGE (G) [A]

LDU-15

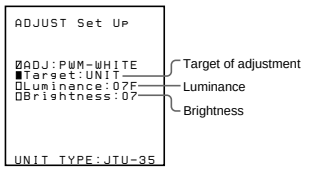
If-White [0] → If-Blue [1] → If-Red [2] → If-Green [3] → If-Range [4] → If-Blue (B) [5]
↑ If-Green (G) [7] ← If-Red (R) [6] ←

* If-Range (B) [8], * If-Range (R) [9], * If-Range (G) [A]

2 Selecting the target of luminance adjustment and setting the unit to the proper brightness level for carrying out the adjustment

You can adjust the luminance of the whole unit or a specified cell or pixel. If necessary, you can set the luminance or brightness of the whole unit to the level at which you can easily make the adjustments. If not necessary to set, skip steps 8 and 9 below.

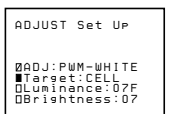
6 Press the SETUP button.



7 To change the target of adjustment, select “Target” with the ⇳ or ⇳ button, then press the ⇨ or ⇦ button to change.

The display changes in the order of UNIT, CELL and PIXEL each time you press the ⇨ button. (It changes in the reverse order each time you press the ⇦ button.)
When you select G1-VOLTAGE or REF-VOLTAGE in the procedure 1 , PIXEL does not appear.

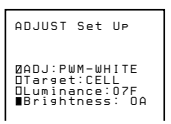
Example: Selecting the cell for the target of adjustment



8 To change the luminance or brightness of the whole unit, select “Luminance” or “Brightness” with the ⇳ or ⇳ button, then change the data with the ⇨ or ⇦ button, or the numeric buttons.

The adjustable range is 256 levels from 000 to 0FF for luminance, and 16 levelss from 00 to 0F for brightness.
The level increases by 1 when you press the ⇨ button and decreases by 1 when you press the ⇦ button. You can also select the level by pressing the numeric buttons that correspond to its level (for exampe, to set it to 07F, press 0, 7 then F).

Example: Setting the brightness to 0A



(Continued)

9 Press the ENTER button to finish the setting.

The selected target of adjustment, luminance and brightness data are stored in the memory. The display returns to the MANUAL ADJUST menu.

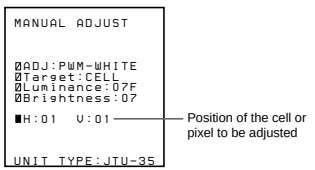
To cancel the setting before storing

Press the SETUP button before pressing the ENTER button in step 9. The data are not stored and the display returns to the menu in step 4.

3 Selecting cell or pixel to be adjusted

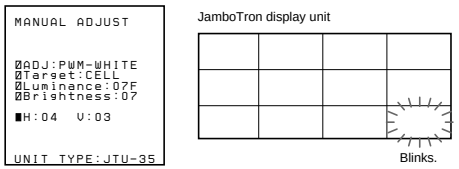
When you select CELL or PIXEL as the target of the adjustment, specify the position of the cell or pixel to be adjusted. (If you select UNIT, skip steps 11 and 12.)

10 Press the ENTER button.



11 Press the ⇧, ⇩, ⇨ or ⇦ button so that the cell or pixel to be adjusted blinks.

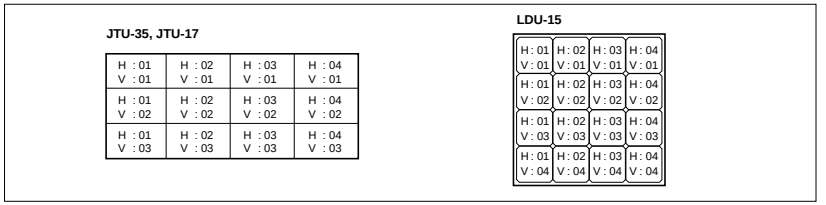
Example: Adjusting the cell in the bottom right corner of the unit



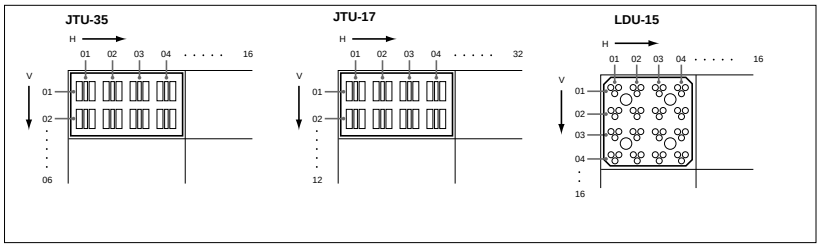
The selectable position of the target is as follows:

Unit type	Target of adjustment	Selectable position
JTU-35	UNIT	H: 01, V: 01 only (cannot be changed)
	CELL	H: 01–04, V: 01–03
	PIXEL	H: 01–16, V: 01–06
JTU-17	UNIT	H: 01, V: 01 only (cannot be changed)
	CELL	H: 01–04, V: 01–03
	PIXEL	H: 01–32, V: 01–12
LDU-15	UNIT	H: 01, V: 01 only (cannot be changed)
	CELL	H: 01–04, V: 01–04
	PIXEL	H: 01–16, V: 01–16

Numbering the position of a cell

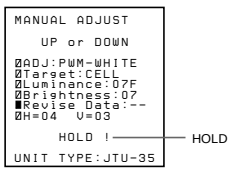


Numbering the position of a pixel



12 Press the HOLD button.

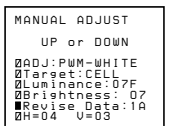
The cell or pixel to be adjusted is stored and stops blinking. "HOLD!" appears in the display window.



4 Adjusting the luminance

13 Press the ⇧ or ⇩ button or the numeric buttons to adjust the luminance to the desired level.

Make the adjustment while watching the unit.



Note

When you adjust "If-Range," or "If-Range (B)," "(R)" or "(G)" for the LDU-15, enter 00, 01, 02 or 03 with the numeric buttons. You cannot use the ⇧ and ⇩ buttons.

(Continued)

Adjusting the Luminance Manually

The adjustable range of the data is as follows:

Unit type	Adjustment mode	Adjustable range of the data
JTU-35	PWM-White PWM-Blue, PWM-Blue (B) PWM-Red, PWM-Red (R) PWM-Green, PWM-Green (G)	32 levels
	G1-VOLTAGE, G1-VOLTAGE (B), (R), (G)	256 levels
JTU-17	G1V-White G1V-Blue, G1V-Blue (B) G1V-Red, G1V-Red (R) G1V-Green, G1V-Green (G)	256 levels
	REF-VOLTAGE, REF-VOLTAGE (B), (R), (G)	Not adjustable
LDU-15	If-White If-Blue, If-Blue (B) If-Red, If-Red (R) If-Green, If-Green (G)	256 levels
	If-Range If-Range (B), (R), (G)	4 levels

To adjust the luminance of another cell

Press the HOLD button to cancel the HOLD mode, then follow steps 10 to 13.

To adjust the luminance of another pixel or in another manual adjustment mode

Press the ENTER button, then follow steps in procedures 3 and 4.

5 Finishing the luminance adjustment

14 After the adjustment is complete, press the WRITE button.

The adjusted level is stored, and the display returns to the SPG Mode menu.

Do not operate the controller about 10 seconds after the WRITE button is pressed, as the JumboTron display unit is writing the data into the memory.

To restore the condition before adjustment without storing the adjusted data

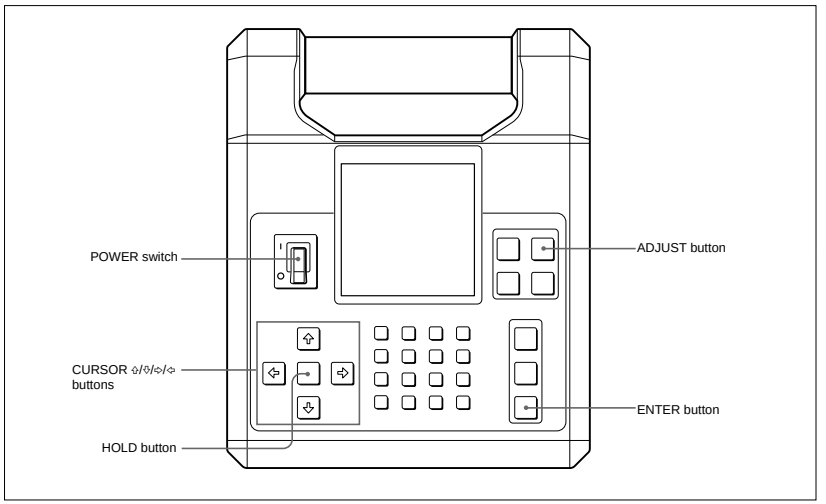
Press the SPG button before pressing the WRITE button in step 14. The JumboTron display unit is restored to the condition before adjustment.

Adjusting the Luminance Automatically Using a Sensor

Connect the sensor (not supplied) to the unit alignment controller. *(See page 11 for connection.)*

First, attach the sensor to a cell with correct luminance and make the controller read the correct data. Then attach the sensor to the cell to be adjusted. The luminance of this cell is automatically adjusted so that the data is the same as the correct data.

When you replace a cell, you can set the luminance of that cell to the same level as the remaining cells.



1 Selecting the sensor adjustment mode

1 Set the POWER switch to ON.

The title menu appears in the display window, then display changes to the UNIT type select menu.

Title menu

```
SONY
JumboTron
JME-UA200
ver 1.0
```

UNIT type select menu

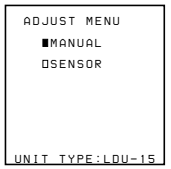
```
Select UNIT Type
□JTU-35 Series
□JTU-17 Series
■LDU-15 Series
```

2 Press the ⇧ or ⇩ button to select the type of the JumboTron display unit, and press the ENTER button.

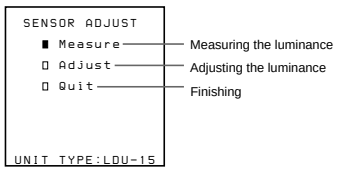
(Continued)

Adjusting the Luminance Automatically Using a Sensor

3 Press the ADJUST button.



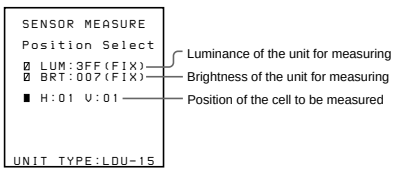
4 Press the ⇧ or ⇩ button to select SENSOR, and press the ENTER button.



2 Measuring the luminance

5 Press the ⇧ or ⇩ button to select “Measure,” and press the ENTER button.

The top leftmost cell blinks.

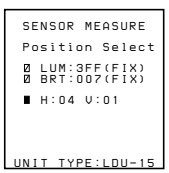


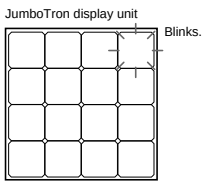
The luminance of the unit for measuring is fixed at 0FF for the JTU-35 and JTU-17, and 3FF for the LDU-15. The brightness is fixed at 007 for any model.

6 Press ⇧, ⇩, ⇨ or ⇦ button to make the cell you want to measure blink.

The display shows the position of the selected cell.

Example: Measuring the cell in the top right corner of the unit.





Numbering the position of a cell

JTU-35, JTU-17

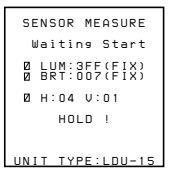
H : 01 V : 01	H : 02 V : 01	H : 03 V : 01	H : 04 V : 01
H : 01 V : 02	H : 02 V : 02	H : 03 V : 02	H : 04 V : 02
H : 01 V : 03	H : 02 V : 03	H : 03 V : 03	H : 04 V : 03

LDU-15

H:01 V:01	H:02 V:01	H:03 V:01	H:04 V:01
H:01 V:02	H:02 V:02	H:03 V:02	H:04 V:02
H:01 V:03	H:02 V:03	H:03 V:03	H:04 V:03
H:01 V:04	H:02 V:04	H:03 V:04	H:04 V:04

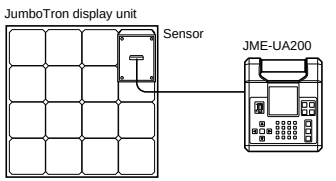
7 Press the HOLD button.

The selected cell is stored in the memory and stops blinking. “HOLD!” appears in the display window.



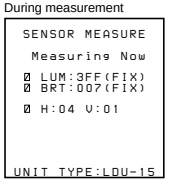
8 Attach the sensor (not supplied) to the position of the target cell and press the ENTER button.

The luminance is automatically measured.

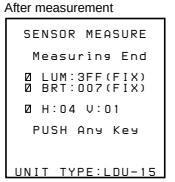


After the measurement is complete, the display changes as follows:

During measurement



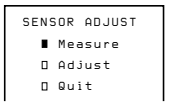
After measurement



(Continued)

9 Press the ENTER button.

The measured data is stored in the memory, and the SENSOR ADJUST menu is restored.

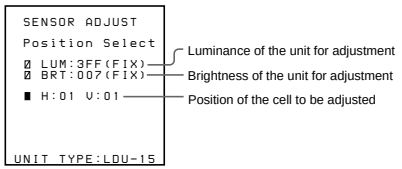


3 Adjusting the luminance automatically

Make the luminance adjustment after completing step 9 above. The luminance of a selected cell is adjusted to the same level as that of the stored data.

10 Select "Adjust" from the SENSOR ADJUST menu with the ⇧ or ⇩ button and press the ENTER button.

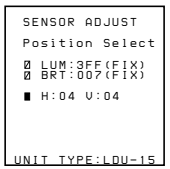
The cell in the top left corner of the unit blinks.



11 Press ⇧, ⇩, ⇨ or ⇦ button to make the cell you want to adjust blink.

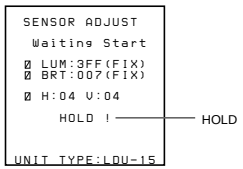
The display shows the position of the selected cell.

Example: Adjusting the cell in the bottom right corner of the unit



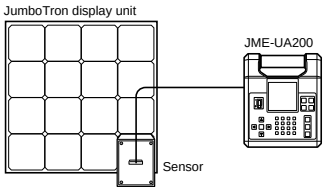
12 Press the HOLD button.

The selected cell is stored in the memory and stops blinking. "HOLD!" appears in the display window.

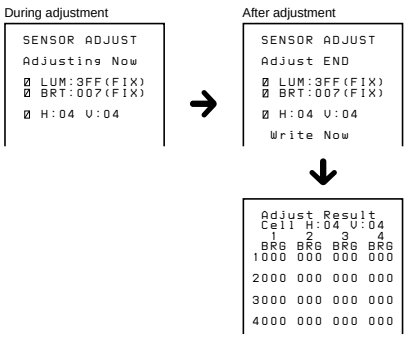


13 Attach the sensor (not supplied) to the target cell and press the ENTER button.

The luminance is automatically measured.



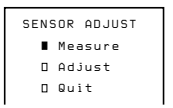
After the adjustment is complete, the display changes as follows:



The unit writes the data into the memory after "Adjust END" appears, then displays the measured data in the display window about 10 seconds later.

14 Press the ENTER button.

The SENSOR ADJUST menu is restored.



4 Finishing the adjustment

15 Select "Quit" from the SENSOR ADJUST menu with the ⇧ or ⇩ button, and press the ENTER button.

If adjustment fails

Try to repeat from step 9 to make adjustment again. Should "Adjust NG" still appear, adjustment failure may be caused by the light-emitting limits of the cell. Check the revised light emission data using "Revise Data menu." *(See page 34.)*

If the revision value is at its maximum limit, you cannot make the adjustment.

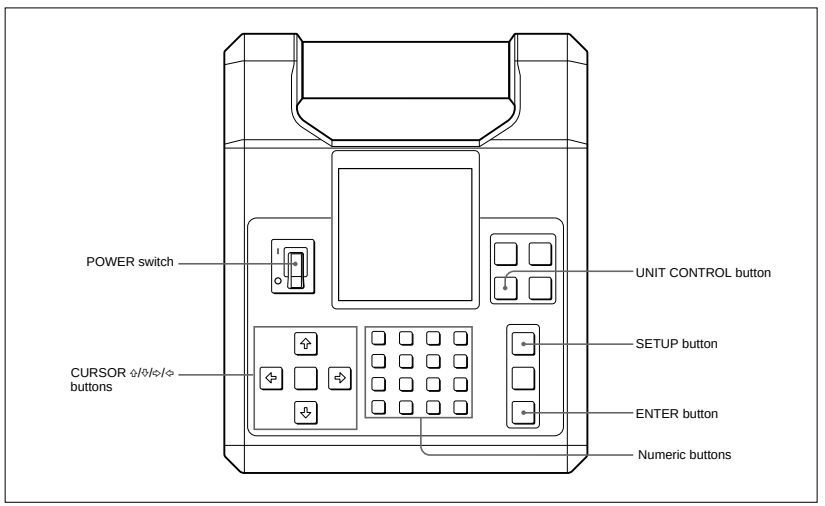
Checking the JumboTron Display Unit Functions

You can check whether the JumboTron display units are operating properly or not, or check the current condition of a unit.
You can select from among eight check modes as shown below.

Menu in the display window	Function to be checked
UNIT Reset	Resets the microprocessor in a unit to its initial condition.
LED Check	Checks the operation of the indicator on the rear of a unit
Cursor Check	Checks the blinking and lighting operations of a unit
UNIT SPG	Checks the operation of the test signal generator built in a unit
UNIT Type	Checks the communication between the controller and a specified unit by displaying the unit type in use in the display window
Revise Data	• Displays the revised light emission data of each dot. • Displays the present HV (High Voltage) current value of a unit. • Checks for defective cells in a unit.
UNIT Condition (only for the LDU-15)	Checks the conditions (fan operation, temperature inside the unit, and power line condition) of a unit
Fan Speed (only for the LDU-15)	Changes the fan speed.

Selecting the check mode

The operation is the same for all of the function check modes.



1 Set the POWER switch to ON.
The title menu appears in the display window, then the display changes to the unit type select menu.

Title menu

```
SONY
JumboTron
JME-UA200
ver 1.0
```

Unit type select menu

```
Select UNIT Type
■JTU-35 Series
□JTU-17 Series
□LDU-15 Series
```

2 Press the ⇧ or ⇩ button to select the type of the JumboTron display unit (UNIT Type), and press the ENTER button.

3 Press the UNIT CONTROL button.

The UNIT CONTROL menu appears in the display unit.

JTU-35, JTU-17

```
UNIT CONTROL

■ UNIT Reset
□ LED Check
□ Cursor Check
□ UNIT SPG
□ UNIT Type
□ Revise Data


UNIT TYPE:JTU-35
```

LDU-15

```
UNIT CONTROL

■ UNIT Reset
□ LED Check
□ Cursor Check
□ UNIT SPG
□ UNIT Type
□ Revise Data
□ UNIT Condition
□ Fan Speed:Fast

UNIT TYPE:LDU-15
```

4 Press the ⇧ or ⇩ button to select the desired check mode, and press the ENTER button.

Example: Selecting the UNIT SPG mode

```
UNIT CONTROL
UNIT SPG
■ Stair Step
□ Color Bar
□ Characters
□ Free Running
□ Stop
```

Resetting the microprocessor in a JumboTron display unit to its initial condition (UNIT Reset)

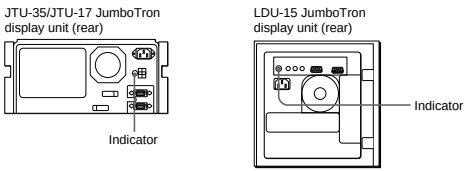
Use this function to reset a unit by sending the reset signal to the microprocessor built in the unit. The unit is reset to the normal light emitting condition.

Select "UNIT Reset" from the UNIT CONTROL menu.
The following display appears in the display window, and after about a second the display returns to the UNIT CONTROL menu.

```
UNIT CONTROL
UNIT Reset Now !
```

Checking the operation of the indicator on the rear of a JumboTron display unit (LED Check)

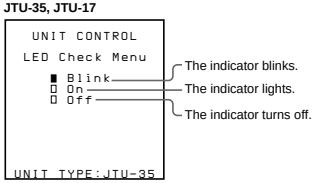
Check if the indicator lights, blinks or turns off correctly.



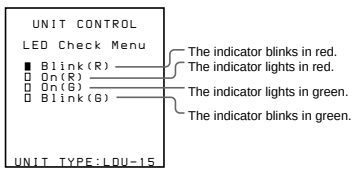
1 Select “LED Check” from the UNIT CONTROL menu.

The “LED Check Menu” appears in the display window.

JTU-35, JTU-17



LDU-15



2 Press the ⇳ or ⇵ button to select the operation mode to be checked, and press the ENTER button.

The indicator changes to the selected operation mode. (You can check each of the operations by repeating this step.)

3 Press the UNIT CONTROL button to finish checking.

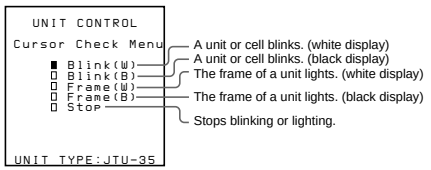
The display window returns to the UNIT CONTROl menu. The indicators which are lit or blinking turn off.

Checking the blinking or lighting operation of a JumboTron display unit (Cursor Check Menu)

Check if a unit or cell blinks correctly. You can set the display color of a unit which does not blink to white or black. Check also if the frame of the unit lights correctly.

1 Select “Cursor Check” from the UNIT CONTROL menu.

The “Cursor Check Menu” appears in the display window.



To check if a unit or cell blinks correctly

2 Select “Blink (W)” or “Blink (B)” with the ⇳ or ⇵ button, and press the ENTER button.

The whole unit blinks.

3 Press the ENTER button.

The top leftmost cell blinks.
Each time you press the ENTER button, other cells blink one after another. After the cell at the bottom right corner blinks, the whole unit blinks again.
The cell which does not blink is shown in white if you select (W) in step 2. If you select (B), that cell is shown in black.

To check if the frame of a unit lights up

2 Press ⇳ or ⇵ to select “Frame (W)” or “Frame (B),” and press the ENTER button.

The outmost dots around the unit light up.
If the SPG Mode (test signal mode) is set to WHITE, you may not check if they light or not. In this case, select the test signal other than WHITE using the SPG button *(see page 13)*.
The frame of the unit which does not light up is shown in white if you select (W). If you select (B), it is shown in black.

3 Press the UNIT CONTROL button to finish checking.

The display window returns to the UNIT CONTROl menu.

Checking the operation of the test signal generator in a JumboTron display unit (UNIT SPG)

1 Select UNIT SPG from the UNIT CONTROL menu.

The UNIT SPG menu appears in the display window.

2 Press the ⇧ or ⇩ button to select the desired test signal, and press the ENTER button.

The test signal generator in the unit starts operating.

When you select “Stair Step,” “Color Bar” or “Characters” (not selectable for LDU-15), the selected test signal scrolls.
When you select “Free Running,” various test signals automatically scroll one after another.

3 To stop scrolling, press the ⇩ button to select “Stop,” then press the ENTER button.

4 Press the UNIT CONTROL button to finish checking.

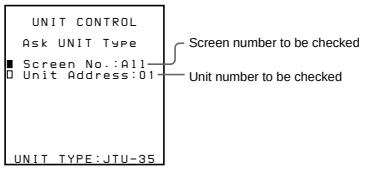
The display window returns to the UNIT CONTROL menu.

Checking the communication between the controller and a JumboTron display unit (Ask UNIT Type)

To check whether the communication between the controller and a specified unit is correct or not, the controller sends the unit a signal to ask for the type of the unit. If communication is correctly carried out, the unit type appears in the display window.

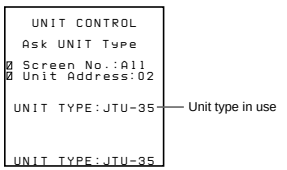
1 Select UNIT Type from the UNIT CONTROL menu.

The “Ask UNIT Type” menu appears in the display window.



2 Press the ⇧ or ⇩ button or the 0 to 9 numeric buttons to select the unit number to be checked, and press the ENTER button.
If communication is correctly carried out, the unit returns the signal to display its unit type (JTU-35, JTU-17 or LDU-15) in the display window.

Example: Checking the communication with the unit No. 02



3 To check other units, press the ENTER button again, then repeat step 2.

4 Press the UNIT COTNROL button to finish checking.

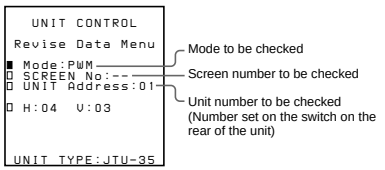
The display window returns to the UNIT CONTROL menu.

If the selected unit number does not exist or the communication is not carried out correctly
The “Communication Error!” appears in the display window instead of the unit type. Check the cause and try checking the communication again.

Checking the revised light emission data of each dot, HV current value of a unit or a defictive cell (Revise Data Menu)

1 Select “Revise Data” from the UNIT CONTROL menu.

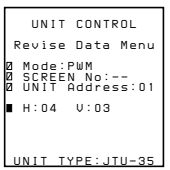
The “Revise Data Menu” appears in the display window.



2 Press the ⇳ or ⇳ button to select the item you want to change. Then change the data with the ⇨ or ⇦ button, and press the ENTER button.

Unit type	Item	Meaning
JTU-35	Mode	PWM: to check the revised pulse width data for the basic clock G1V: to check the revised data of voltage applied to each cell CELL Down: to check for defective cells in a specified unit Ip: to check the HV (High Voltage) current value of a specified unit
	SCREEN No.	Specifies the screen you want to check (“SCREEN No: all” is displayed automatically. You cannot change this item.)
	UNIT Address	Specifies the setting number of the switch on the rear of the unit to be checked (1-96)
JTU-17	Mode	G1V: to check the revised data of voltage applied to each cell REF: to check the standard voltage applied to each cell CELL Down: to check for defective cells in a specified unit Ip: to check the HV (High Voltage) current value of a specified unit
	SCREEN No.	Specifies the screen you want to check
	UNIT Address	Specifies the setting number of the switch on the rear of the unit to be checked (1-48)
LDU-15	Mode	If-Data: to check the revised data of voltage applied to each cell If-Range: to check the range of current applied to each cell
	SCREEN No.	Specifies the screen you want to check
	UNIT Address	Specifies the setting number of the switch on the rear of the unit to be checked (1-48)

3 Press the ⇨ or ⇦ button to select the position of the cell or pixel to be checked. *See “Numbering the position of a cell (pixcel)” on page 21.)*



4 Press the ENTER button.

The data of the selected mode appear in the display window. For details, see the respective item below.

5 To check other modes or those for other units, press the ENTER button again and repeat steps 2 to 4.

6 Press the UNIT CONTROL button to finish checking.

If the selected unit number does not exist or the communication is not carried out correctly

The “Communication Error!” appears in the display window instead of the data of the selected mode. Check the cause and try to repeat the steps above.

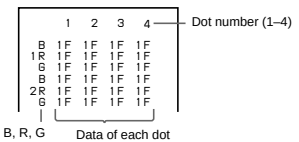
To check the revised light emission data of each dot

The light emission data of each dot in a JumboTron display unit are adjusted to light evenly. You can check the revised data of each dot in the display window.

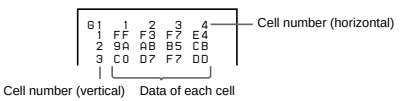
In step 2 on page 34, set “SCREEN No. (JTU-17, LDU-15 only)” and “UNIT Address,” then select one of the following modes.

JTU-35

PWM: The revised pulse width data of each dot for the selected position are displayed.



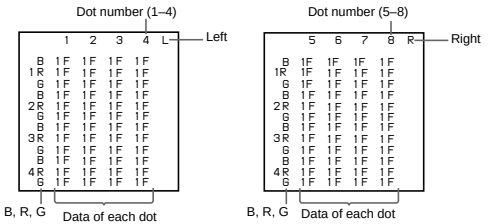
G1V: The revised voltage data of each cell are displayed.



Checking the JumboTron Display Unit Functions

JTU-17

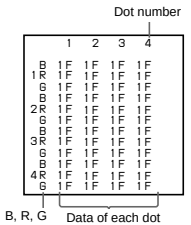
G1V: The revised voltage data of each dot for the selected position are displayed.
Press ⇨ button to display the data for four dots on the right, or ⇦ button to display those on the left .


Dot number (1–4)
1 2 3 4 L
Left
B 1F 1F 1F 1F
1R 1F 1F 1F 1F
G 1F 1F 1F 1F
B 1F 1F 1F 1F
2R 1F 1F 1F 1F
G 1F 1F 1F 1F
B 1F 1F 1F 1F
3R 1F 1F 1F 1F
G 1F 1F 1F 1F
B 1F 1F 1F 1F
4R 1F 1F 1F 1F
G 1F 1F 1F 1F
B, R, G
Data of each dot
Dot number (5–8)
5 6 7 8 R
Right
B 1F 1F 1F 1F
1R 1F 1F 1F 1F
G 1F 1F 1F 1F
B 1F 1F 1F 1F
2R 1F 1F 1F 1F
G 1F 1F 1F 1F
B 1F 1F 1F 1F
3R 1F 1F 1F 1F
G 1F 1F 1F 1F
B 1F 1F 1F 1F
4R 1F 1F 1F 1F
G 1F 1F 1F 1F
B, R, G
Data of each dot

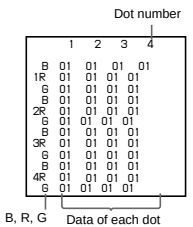
REF: The standard voltage data of each cell are displayed.

LDU-15

If-Data: The revised voltage data of each dot for the selected position are displayed.


Dot number
1 2 3 4
B 1F 1F 1F 1F
1R 1F 1F 1F 1F
G 1F 1F 1F 1F
B 1F 1F 1F 1F
2R 1F 1F 1F 1F
G 1F 1F 1F 1F
B 1F 1F 1F 1F
3R 1F 1F 1F 1F
G 1F 1F 1F 1F
B 1F 1F 1F 1F
4R 1F 1F 1F 1F
G 1F 1F 1F 1F
B, R, G
Data of each dot

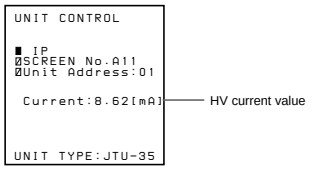
If-Range: The current range data for each cell are displayed.



To check the present HV current value (JTU-35, JTU-17 only)

The HV (High Voltage) current of the JumboTron display unit is measured and displayed in the display window.

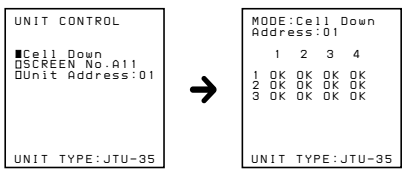
In step 2 on page 34, set “SCREEN No. (JTU-17 only) and “UNIT Address,” then select “Ip” to display the data.
The unit measures the HV current, and the measured value is displayed in the display window.



To check for defective cells (JTU-35, JTU-17 only)

The JumboTron display unit checks for defective cell and shows it in the display window.

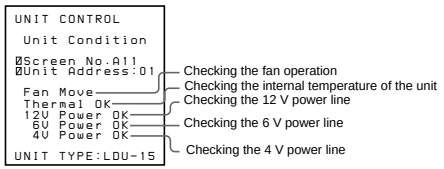
In step 2 on page 34, set “SCREEN No.” (JTU-17 only) and “UNIT Address,” then select “CELL Down” to display the data in the display window.



Checking the present conditions of the JumboTron display unit (Unit Condition) (LDU-15 only)

1 Select “UNIT Condition” from the UNIT CONTROL menu.

The “Unit Condition” menu appears in the display window.



2 Select the screen No. and unit address to be checked.
Press the ⇧ or ⇩ button to select “SCREEN No.” or “UNIT Address,” change the item with the ⇨ or ⇦ button, and press the ENTER button.

The following items are displayed in the display window.

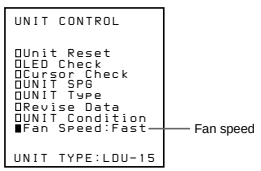
Item	Meaning
Fan Move (or Stop)	The fan in the unit is running (or stops).
Thermal OK (or NG)	The temperature inside the unit is normal (or abnormal).
12 V/6 V/4 V Power OK (or NG)	The 12 V, 6 V and 4 V power line operations are normal (or abnormal).

3 Press the UNIT CONTROL button to finish checking.

If the selected unit number or screen number does not exist or the communication is not carried out correctly
The “Communication Error!” appears in the display window instead of the data. Check the cause and try to repeat the steps above.

Changing the fan speed of a JumboTron display unit (Fan Speed) (LDU-15 only)

1 Press the ⇧ or ⇩ button to select “Fan Speed” from the UNIT CONTROL menu.



2 Press the ⇨ or ⇦ button to select “Fast” or “Slow.”

The running speed of the fan will become faster when selecting “Fast,” and will become slower when selecting “Slow.”

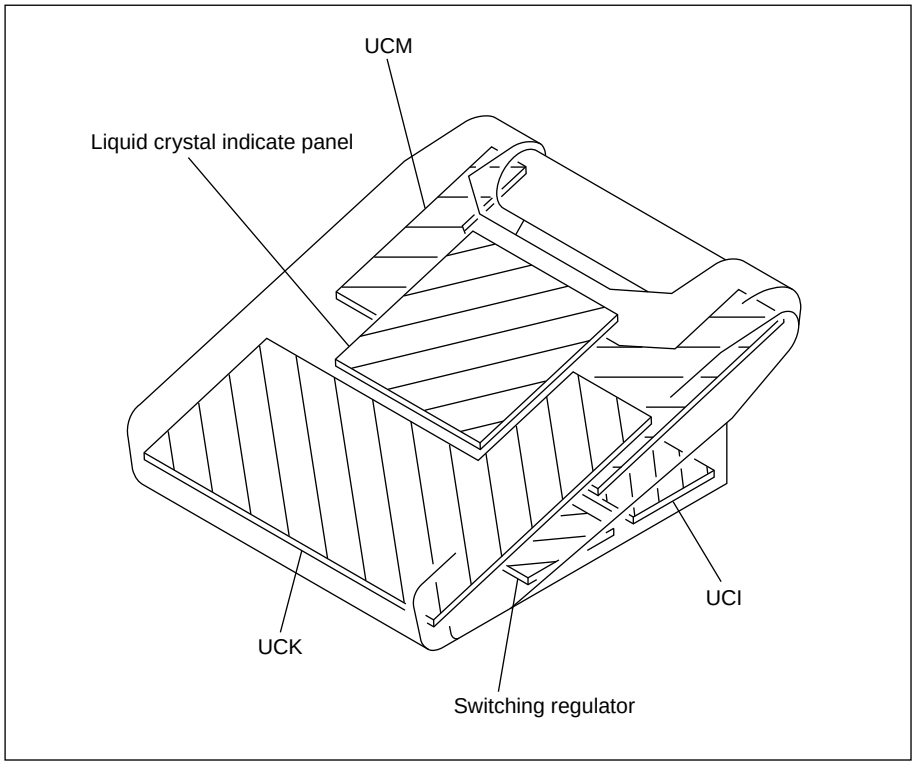
Specifications

Power requirements	100 to 240 V AC, 50/60 Hz
Current consumption	0.2 A
Dimensions	200 × 240 × 90 mm ($7^{7}/_{8} \times 9^{1}/_{2} \times 3^{5}/_{8}$ inches)
Mass	1.6 kg (3 lb 8 oz)
Operating temperature	0°C to 45°C (32°F to 113°F)
Operating humidity	30% to 70%
Input/output	SIGNAL OUT: D-sub 15-pin SENSOR: Half-pitch 20-pin COM: D-sub 9-pin
Supplied accessories	Signal cable (2 m) (2) AC power cord (3) Operation Manual (1)

Design and specifications are subject to change without notice.

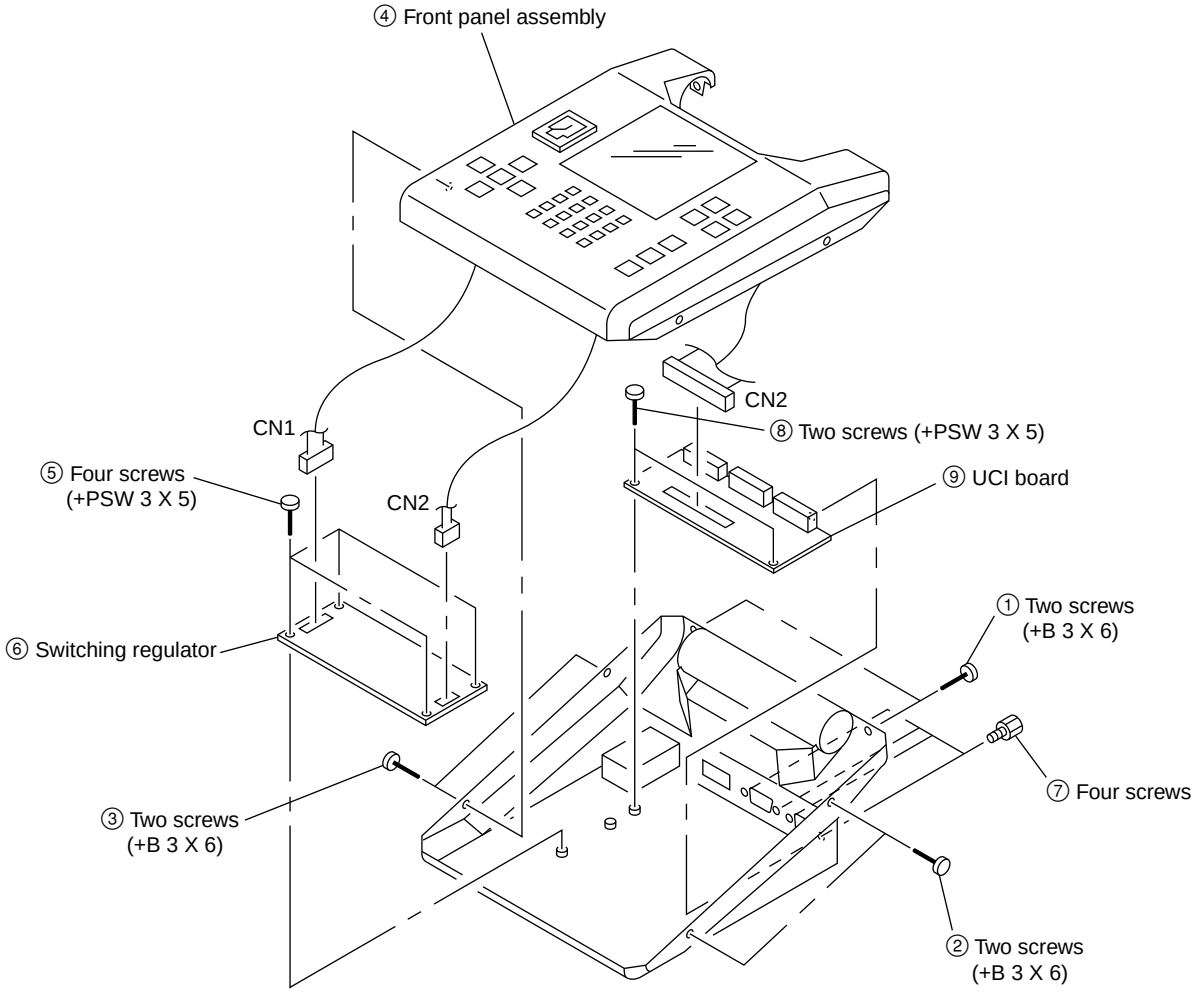
SECTION 2
SERVICE INFORMATIONS

2-1. CIRCUIT BOARDS LOCATION

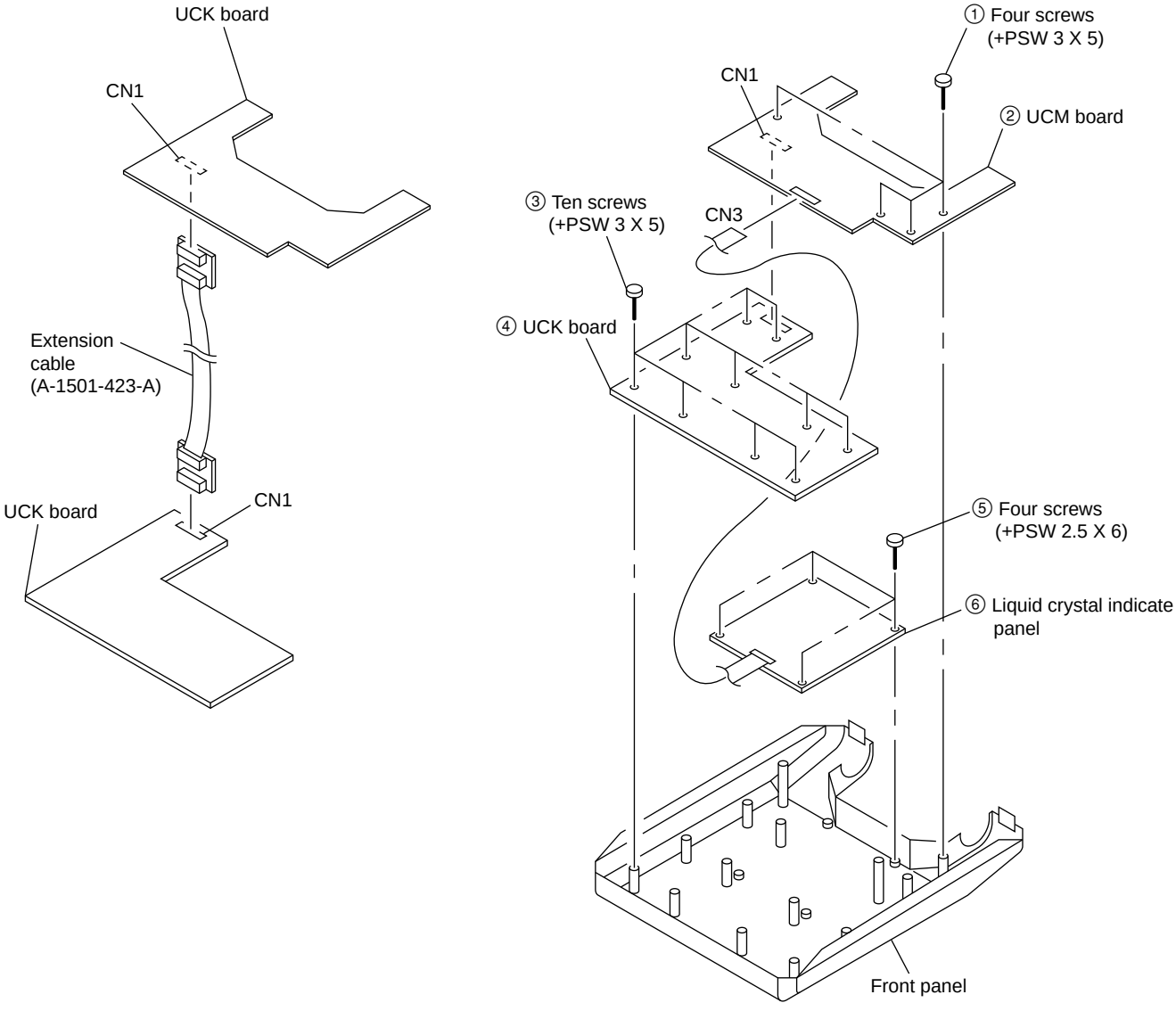


2-2. DISASSEMBLY

2-2-1. Switching Regulator and UCI Board Removal



2-2-2. UCM, UCK Boards and Liquid Crystal Indicate Panel Removal



SECTION 3
CIRCUIT ADJUSTMENTS

3-1. LCD CONTRAST ADJUSTMENT

1. Start up the JME-UA200, and make adjustment under the condition of Menu screen shown below. (Fig. 1)
2. Adjust the LCD contrast by rotating the RV1 so that characters are legible when a potential difference rangebetween pins 1 and 3 of RV1 is 10 to 11.5V.

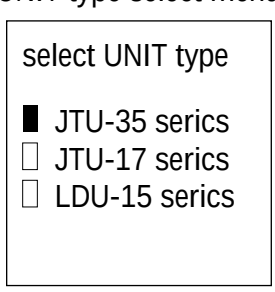


Fig. 1

3-2. OPERATION CHECK

1. Connect the LDU-15, and perform operation check.
2. In the SPG mode, select TEST signal and check the operation of WHITE, BLUE, RED, GREEN, STAIR STEP, COLOR BAR-V, COLOR BAR-H, and BLANKING signals.
3. In the UNIT CONTROL mode, select the UNIT TYPE. Adjust the unit address of LDU-15 to the address displayed on the LCD, and select “All” for the screen No.
4. Start operation, and confirm that the communication can be made normally.
   If normal, the following display will appear. (Fig. 2)

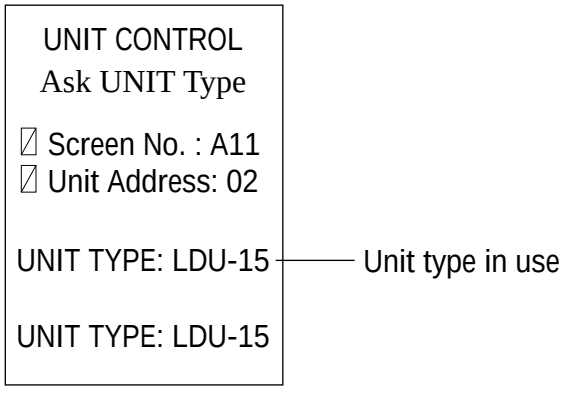


Fig. 2

3-3. CHECKING IN UNIT CONTROL MODE

Connect the LDU-15, and make the following checking in the Unit Control mode.

1. Select UNIT Reset, and check that the unit is reset. (The unit will blink once.)
2. Select LED Check, and check that an indicator on the rear panel blinks red when the ENTER key is pressed in Blink (R) mode.
   (Beforehand, check that an indicator on the rear panel lights green when the unit is connected.)
3. Select Cursor Check, and check that a white screen appears on the unit and one cell blinks when the ENTER key is pressed in Blink (W) mode.
4. Select UNIT SPG, and the stairsteps, color bars, and characters are displayed on the unit when the ENTER key is pressed in Free Running mode.
5. Select Unit Condition, screen No., and unit address to be checked. Check that the communication with the unit is possible and LCD display is made when the ENTER key is pressed.
6. Select Fan Speed, and check that the speed of unit fan varies as displayed on the LCD with ∫ ⇦ keys.

3-4. DEMONSTRATION CHECK

1. Connect the LDU-15, and check that the characters appear on the unit when the DEMO key is pressed. (Set the rotary switch on the rear panel of unit to 001.)

3-5. ADJUSTMENT AND CHECK BY SENSOR

1. Connect the LDU-15 and the unit sensor JME-US15L, then make a checking.
2. In the ADJUST mode, select SENSOR, and press the ENTER key to select Measure.
3. Select H: 02, V: 01 cell, and press the HOLD key.
4. Insert the sensor into that cell, and press the ENTER key to perform measurement.
5. After measurement, select Adjust with the SENSOR ADJUST MENU.
6. Select H: 02, V: 01 cell, and press the HOLD key.
7. Insert the sensor into that cell, and press the ENTER key, so that the brightness is adjusted automatically, then the adjustment result is displayed. Check the result that B, R, G of each dot are OK (O marking).
   (O marking for OK dots, or ✕ marking for NG dots is given in each cell.)

SECTION 4
CIRCUIT DESCRIPTIONS

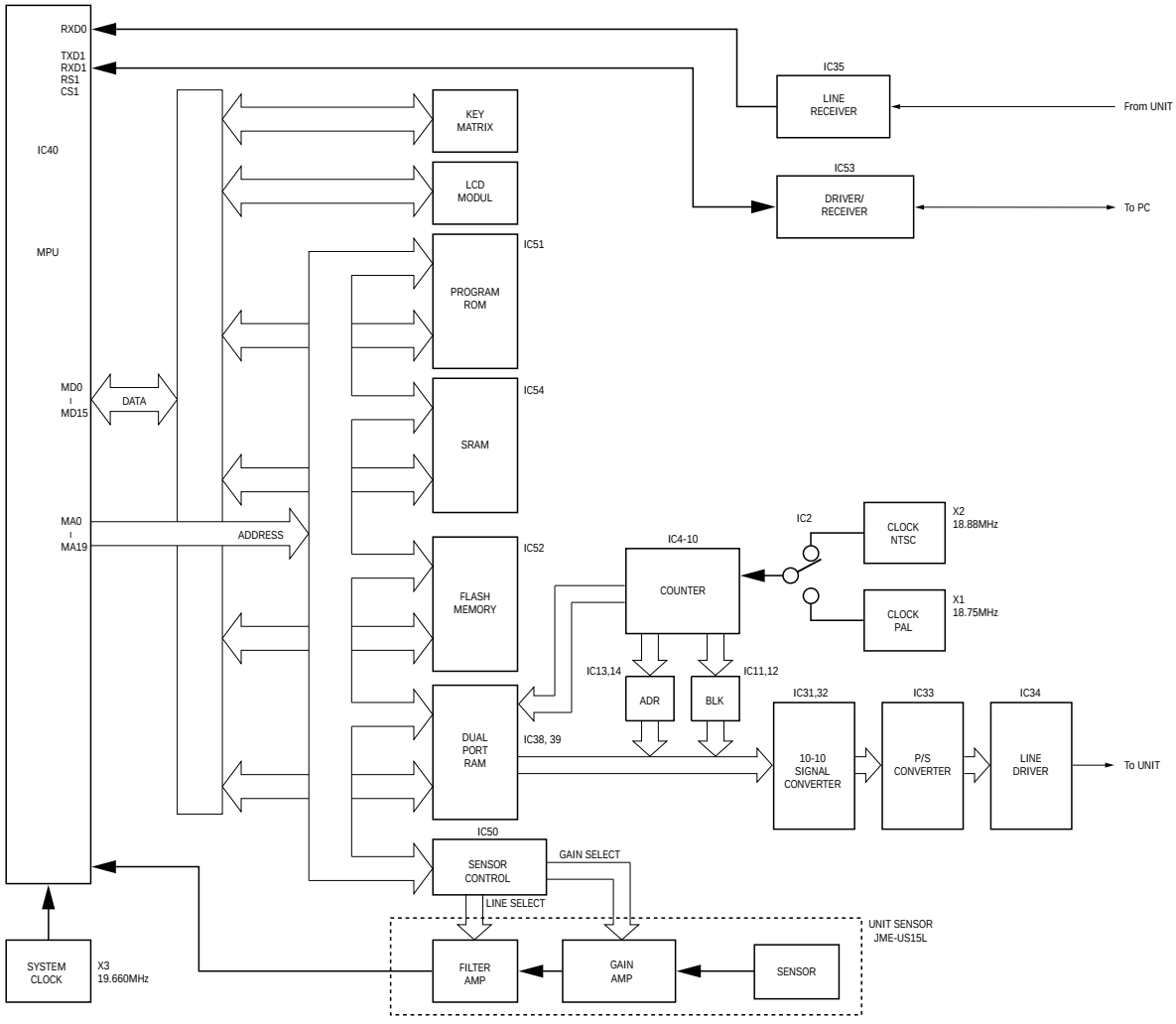


Fig. 1 Block Diagram

4-1. SPG MODE

The MPU (IC40) reads the mode selected with the key matrix, and writes video data corresponding to the mode into the left side of dual port RAM (IC38, 39) every 1/60 second. On the other hand, the counters (IC4-10) are rotated by the clock selected with the change-over switch (IC2) to read out video data written by the MPU (IC40) from the right side in the order of Jumbo Tron format. For the synchronization, SYNC signal, EOF signal, and line addresses are added, then they are coded by the 10-10 signal converter (IC31, 32). (To insulate the unit, the signals are forced through the pulse transformer before they are received, so that the 10-10 conversion is made to remove adirect current component. Also, the transmission error detection is executed.) The coded data are serial-parallel converted (IC33) to be serial signals, then transmitted to the unit by the differential line driver (IC34). (By the amount of 32 dots in horizontal direction)

4-2. ADJUST MODE

Various codes for brightness adjustment or unit control are transmitted with vertical sync part (483 blocks for NTSC, or 580 blocks for PAL) after video data. Normally, non-processing codes (NOP codes) are transmitted with these blocks, but if the commandsfor brightness adjustment and unit control are entered from the keyboard, the MPU (IC40) writes the control codes indual port RAM (IC38, 39), and they are inserted into the control data blocks and trans-mitted. (One command every 1/60 sec forNTSC, or one command every 1/50 sec for PAL)

4-3. UNIT CONTROL MODE

Same as in ADJUST mode, the unit control commands are inserted in the control data blocks and transmitted to the unit. In making inquiry for model name or brightness correc-tion value to the unit, if the control data are transmitted, the inquired data are returned from the unit in the ASCII codes of serial data at 4800bps for JTU-35/17 Series, or 9600pbs for LDU-15 Series. These data are received with the line driver (IC35), and entered to the RXD0 of the MPU (IC40). These data are analyzed and displayed on the LCD.

4-4. DEMO MODE

Storing video data for demonstration can display pictures and character patterns of maximum 64x64 dots.

4-5. AUTOMATIC BRIGHTNESS ADJUSTMENT BY SENSOR

1. Brightness adjustment of reference cell

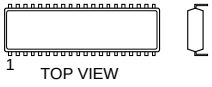
Photodiode sensor (JME-US15L) detects the brightness of each element in the Jumbo Tron unit cell, and flows the current according to the brightness. This current value is converted into the voltage, and entered through filter amplifier to the A/D converter of the MPU (IC40) every R, G and B signals. Here, they are converted into 10bit data.

2. Brightness adjustment

The brightness of each element in the cell to be adjusted is entered and compared with the reference value. If it is larger than reference value, the code to reduce the bright-ness, or if smaller, the code to increase the brightness is inserted in the control blocks mentioned previously and transmitted to the unit. Here, again the brightness is measured and this operation is repeated until the measured value is equal to the reference value.

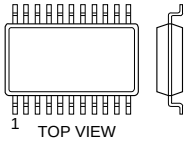
SECTION 5
SEMICONDUCTORS

DS26C31TM
DS26C32ATM



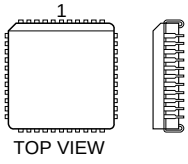
16pin DIP

DS26C31TMX
DS26C32ATMX
TC74AC138F
TC74AC161F
TC74AC163F



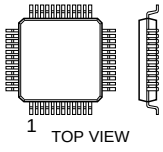
16pin SOP

EPM7064LC44-15
HN27C1024HCC-10



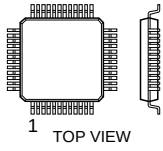
44pin QFJ

HD6413003RF-12



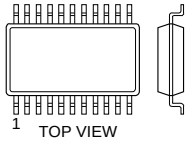
112pin QFP

IDT7024L25PF
IDT7027L55PF



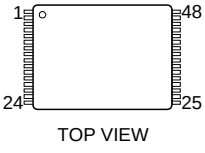
100pin QFP

MAX233ACWP
SC370605D
TC74AC541F
TC74AC541F-EL
TC74AC574F

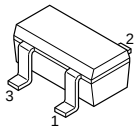


20pin SOP

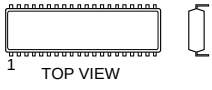
MBM29F200TA-70PFTN-1



PST572CMT
PST572CMT-T1

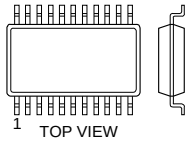


TC554161FTL-70V



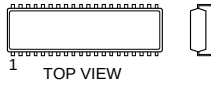
44pin DIP

TC74AC00F
TC74AC02F
TC74AC04F
TC74AC20F
TC74AC574F-EL
TC74AC74F
TC74AC86F



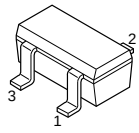
14pin SOP

WS57C43C-35

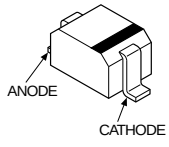


24pin DIP

1SS123
1SS226



1SS355
1SS355TE-17



SECTION 6
EXPLODED VIEWS

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified ⚠ marked are critical for safety.
Replace only with the part number specified.

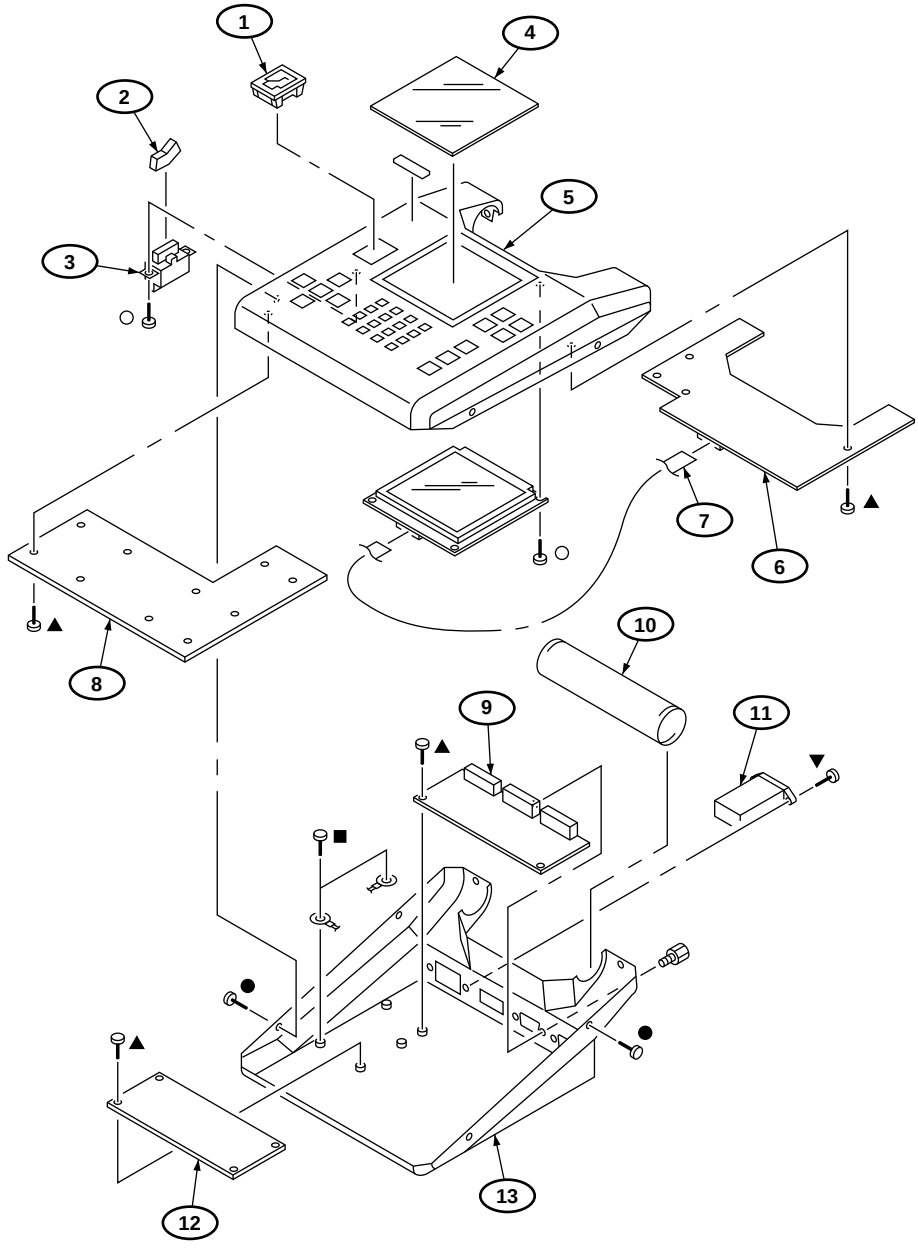
Les composants identifiés par la marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

【使用上の注意】
- ＊印の部品は常時在庫しておりません。
  受注して供給できるまで日数を要します。
- 分解図中の構成部品で，図面番号のない部品は供給しません。
- 組立部品の構成部品は備考欄に図面番号で示します。

⚠印の部品は，安全性を維持するために，重要な部品です。従って交換時は，必ず指定の部品を使用してください。

6-1. CHASSIS

● : 7-682-547-09 +B3x6
▲ : 7-682-946-09 +PSW3x5
▼ : 7-682-348-09 +RK3x8
■ : 7-682-961-01 +PSW4x8
○ : 7-621-763-45 +PSW2.5x6



Rf.No.	Part No.	Description	Remark
1	3-681-054-11	POWER SW GUARD	
2	3-688-814-31	CAP, SWITCH	
3	⚠1-570-117-51	SWITCH, SEESAW (AC POWER)	
4	* 4-065-009-01	GLASS, WINDOW	
5	* 4-065-006-01	PANEL, FRONT	
6	* A-1394-903-A	UCM BOARD, COMPLETE	
7	1-691-364-21	CONNECTOR, FFC/FPC (ZIF) 26P	
8	* A-1390-832-A	UCK BOARD, MOUNT	
9	* A-1390-829-A	UCI BOARD, MOUNT	
10	* 4-065-008-01	HANDLE	
11	⚠1-251-148-11	INLET, AC (WITH FILTER)	
12	⚠1-468-326-11	SWITCHING REGULATOR	
13	* 4-065-007-01	COVER, REAR	

SECTION 7
ELECTRICAL PARTS LIST

NOTE:

The components identified ⚠ marked are critical for safety.
Replace only with the part number specified.

Les composants identifiés par la marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS
- All resistors are in ohms
- F : nonflammable
- CAPACITORS
  PF : μμ F
- There are some cases the reference number on one board overlaps on the other board. Therefore, when ordering parts by the reference number, please include the board name.

【使用上の注意】

⚠印の部品は，安全性を維持するために，重要な部品です。
従って交換時は，必ず指定の部品を使用して下さい。

お願い
図面番号で部品を指定するときは，基板名又はブロックを併せて指定してください。

- 基板どうしでリファレンスNo.が重複している場合がありますので発注の際には必ず基板名を明記して下さい。
- 抵抗の単位Ωは省略してあります。
  酸金被膜：酸化金属被膜抵抗。
  金属被膜：金属被膜抵抗。
  参考欄のFは不燃性抵抗を示します。
- *印の部品は常時在庫しておりません。
- ここに記載されている部品は，補修部品であるため，回路図 及びセットについている部品と異なる場合があります。

Rf.NO.	PART NO.	DESCRIPTION	REMARK
	* A-1390-829-A	UCI BOARD, MOUNT	
		**********	
		<CONNECTOR>	
CN2	1-580-430-11	CONNECTOR 40P	
CN5	1-779-590-12	CONNECTOR (D SUB) 15P	
CN6	* 1-774-712-11	PIN, CONNECTOR (PC BOARD) 20P	
CN7	* 1-691-440-11	CONNECTOR, D SUB 9P	
		<DIODE>	
D5	8-719-800-76	DIODE 1SS226	
D6	8-719-800-76	DIODE 1SS226	
D7	8-719-800-76	DIODE 1SS226	
D8	8-719-800-76	DIODE 1SS226	
D9	8-719-800-76	DIODE 1SS226	
D10	8-719-800-76	DIODE 1SS226	
D11	8-719-800-76	DIODE 1SS226	
D12	8-719-800-76	DIODE 1SS226	
D13	8-719-800-76	DIODE 1SS226	
D14	8-719-800-76	DIODE 1SS226	
D15	8-719-800-76	DIODE 1SS226	
D16	8-719-800-76	DIODE 1SS226	
D17	8-719-800-76	DIODE 1SS226	
D18	8-719-800-76	DIODE 1SS226	
D19	8-719-800-76	DIODE 1SS226	
D20	8-719-800-76	DIODE 1SS226	
D21	8-719-800-76	DIODE 1SS226	
D22	8-719-800-76	DIODE 1SS226	
D23	8-719-800-76	DIODE 1SS226	
D24	8-719-800-76	DIODE 1SS226	
D25	8-719-800-76	DIODE 1SS226	
D26	8-719-800-76	DIODE 1SS226	
D27	8-719-800-76	DIODE 1SS226	
D28	8-719-800-76	DIODE 1SS226	
D29	8-719-800-76	DIODE 1SS226	
D30	8-719-800-76	DIODE 1SS226	
		<FUSE>	
F1	⚠1-533-380-21	FUSE, CHIP (1A 60V)	
		<FILTER>	
FL1	1-239-210-11	EMIFIL ARRAY, CHIP	
FL2	1-239-210-11	EMIFIL ARRAY, CHIP	
FL3	1-239-210-11	EMIFIL ARRAY, CHIP	
FL4	1-239-642-21	EMIFIL ARRAY, CHIP	
**********			
	* A-1390-832-A	UCK BOARD, MOUNT	
		**********	
	3-708-895-01	CAP	
		<CONNECTOR>	
CN1	* 1-785-135-11	PLUG, CONNECTOR (PC BOARD) 30P	

UCK UCM

Rf.NO.	PART NO.	DESCRIPTION	REMARK
		<DIODE>	
D201	8-719-800-76	DIODE 1SS226	
D202	8-719-800-76	DIODE 1SS226	
D203	8-719-800-76	DIODE 1SS226	
D204	8-719-800-76	DIODE 1SS226	
D205	8-719-800-76	DIODE 1SS226	
D206	8-719-800-76	DIODE 1SS226	
D207	8-719-800-76	DIODE 1SS226	
D208	8-719-800-76	DIODE 1SS226	
D209	8-719-800-76	DIODE 1SS226	
D210	8-719-800-76	DIODE 1SS226	
D211	8-719-800-76	DIODE 1SS226	
D212	8-719-988-62	DIODE 1SS355	
D213	8-719-988-62	DIODE 1SS355	
D214	8-719-988-62	DIODE 1SS355	
D215	8-719-988-62	DIODE 1SS355	
		<SWITCH>	
S201	1-762-042-11	SWITCH, TACTILE (ILLUMINATED) (0)	
S202	1-762-042-11	SWITCH, TACTILE (ILLUMINATED) (1)	
S203	1-762-042-11	SWITCH, TACTILE (ILLUMINATED) (2)	
S204	1-762-042-11	SWITCH, TACTILE (ILLUMINATED) (3)	
S205	1-762-042-11	SWITCH, TACTILE (ILLUMINATED) (4)	
S206	1-762-042-11	SWITCH, TACTILE (ILLUMINATED) (5)	
S207	1-762-042-11	SWITCH, TACTILE (ILLUMINATED) (6)	
S208	1-762-042-11	SWITCH, TACTILE (ILLUMINATED) (7)	
S209	1-762-042-11	SWITCH, TACTILE (ILLUMINATED) (8)	
S210	1-762-042-11	SWITCH, TACTILE (ILLUMINATED) (9)	
S211	1-762-042-11	SWITCH, TACTILE (ILLUMINATED) (A)	
S212	1-762-042-11	SWITCH, TACTILE (ILLUMINATED) (B)	
S213	1-762-042-11	SWITCH, TACTILE (ILLUMINATED) (C)	
S214	1-762-042-11	SWITCH, TACTILE (ILLUMINATED) (D)	
S215	1-762-042-11	SWITCH, TACTILE (ILLUMINATED) (E)	
S216	1-762-042-11	SWITCH, TACTILE (ILLUMINATED) (F)	
S217	1-692-890-61	SWITCH, TACTILE (UP)	
S218	1-692-890-61	SWITCH, TACTILE (DOWN)	
S219	1-692-890-61	SWITCH, TACTILE (LEFT)	
S220	1-692-890-61	SWITCH, TACTILE (RIGHT)	
S221	1-692-890-11	SWITCH, TACTILE (HOLD)	
S222	1-692-890-11	SWITCH, TACTILE (SPG)	
S223	1-692-890-11	SWITCH, TACTILE (ADJUST)	
S224	1-692-890-11	SWITCH, TACTILE (UNIT CONTROL)	
S225	1-692-890-11	SWITCH, TACTILE (DEMO)	
S226	1-692-890-11	SWITCH, TACTILE (ENTER)	
S227	1-692-890-11	SWITCH, TACTILE (WRITE)	
S228	1-692-890-11	SWITCH, TACTILE (SET UP)	

****

* A-1394-903-A UCM BOARD, COMPLETE

****

		<CAPACITOR>		
C1	1-162-917-11	CERAMIC CHIP 15PF	5%	50V
C2	1-162-917-11	CERAMIC CHIP 15PF	5%	50V
C3	1-162-917-11	CERAMIC CHIP 15PF	5%	50V
C4	1-162-917-11	CERAMIC CHIP 15PF	5%	50V
C5	1-162-917-11	CERAMIC CHIP 15PF	5%	50V
C6	1-162-917-11	CERAMIC CHIP 15PF	5%	50V
C7	1-128-397-21	ELECT CHIP 100MF	20%	16V
C8	1-128-403-11	ELECT CHIP 47MF	20%	35V
C9	1-128-397-21	ELECT CHIP 100MF	20%	16V
C10	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C11	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C12	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C13	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C14	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C15	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C16	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C17	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C18	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C19	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C20	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C21	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C22	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C23	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C24	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C25	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C26	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C27	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C28	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C29	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C30	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C31	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C32	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C33	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C34	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C35	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C36	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C37	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C38	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C39	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C40	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C41	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C42	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C43	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C44	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C45	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C46	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C47	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C48	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C49	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C50	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C51	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C52	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C53	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C54	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C55	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C56	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C57	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C58	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C59	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C60	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C61	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C62	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V

Rf.NO.	PART NO.	DESCRIPTION	REMARK
C63	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C64	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C65	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C66	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C67	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C68	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C69	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C70	1-107-682-11	CERAMIC CHIP 1MF 10% 16V	
		<CONNECTOR>	
CN1	* 1-785-136-11	RECEPTACLE, CONNECTOR 30P	
CN2	1-580-430-11	CONNECTOR 40P	
CN3	1-691-364-21	CONNECTOR, FFC/FPC (ZIF) 26P	
CN4	1-764-101-11	PIN, CONNECTOR (PC BOARD) 2P	
		<IC SOCKET>	
CNI51	* 1-540-254-11	SOCKET, IC (PLCC)	
		<DC-DC CONVERTER>	
DDC1	1-475-984-11	CONVERTER UNIT, DC-DC	
		<FILTER>	
FL1	1-239-903-11	FILTER, CHIP EMI”	
FL2	1-239-903-11	FILTER, CHIP EMI”	
FL3	1-414-233-21	INDUCTOR CHIP 0UH	
		<IC>	
IC1	8-759-243-06	IC TC74AC04F	
IC2	8-759-243-39	IC TC74AC00F	
IC3	8-759-243-09	IC TC74AC74F	
IC4	8-759-244-00	IC TC74AC161F	
IC5	8-759-244-00	IC TC74AC161F	
IC6	8-759-244-00	IC TC74AC161F	
IC7	8-759-244-85	IC TC74AC574F	
IC8	8-759-244-04	IC TC74AC163F	
IC9	8-759-244-04	IC TC74AC163F	
IC10	8-759-244-00	IC TC74AC161F	
IC11	8-759-244-75	IC TC74AC541F	
IC12	8-759-244-75	IC TC74AC541F	
IC13	8-759-244-75	IC TC74AC541F	
IC14	8-759-244-75	IC TC74AC541F	
IC15	8-759-243-60	IC TC74AC20F	
IC16	8-759-243-60	IC TC74AC20F	
IC17	8-759-243-60	IC TC74AC20F	
IC18	8-759-243-74	IC TC74AC138F	
IC19	8-759-243-06	IC TC74AC04F	
IC20	8-759-243-43	IC TC74AC02F	
IC21	8-759-243-09	IC TC74AC74F	
IC22	8-759-242-51	IC TC74AC86F	
IC23	8-759-242-51	IC TC74AC86F	
IC24	8-759-242-51	IC TC74AC86F	
IC25	8-759-244-75	IC TC74AC541F	
IC26	8-759-244-75	IC TC74AC541F	
IC27	8-759-244-75	IC TC74AC541F	
IC28	8-759-244-75	IC TC74AC541F	
IC29	8-759-244-85	IC TC74AC574F	
IC30	8-759-244-85	IC TC74AC574F	
IC31	8-759-562-91	IC WS57C43C-35-1010H	
IC32	8-759-562-92	IC WS57C43C-35-1010L	
IC33	8-759-562-93	IC EPM7064LC44-15-PSCV	
IC34	8-759-271-77	IC DS26C31TM	
IC35	8-759-271-78	IC DS26C32ATM	
IC36	8-759-243-39	IC TC74AC00F	
IC37	8-759-243-06	IC TC74AC04F	
IC38	8-759-534-49	IC IDT7027L55PF	
IC39	8-759-534-48	IC IDT7024L25PF	
IC40	8-759-275-96	IC HD6413003RF-12	
IC41	8-759-244-75	IC TC74AC541F	
IC42	8-759-244-75	IC TC74AC541F	
IC43	8-759-244-75	IC TC74AC541F	
IC44	8-759-985-55	IC 74AC245SJ	
IC45	8-759-985-55	IC 74AC245SJ	
IC46	8-759-244-75	IC TC74AC541F	
IC47	8-759-244-75	IC TC74AC541F	
IC48	8-759-244-75	IC TC74AC541F	
IC49	8-759-244-75	IC TC74AC541F	
IC50	8-759-244-85	IC TC74AC574F	
IC51	8-759-563-08	IC HN27C1024HCC-10-UA200	
IC52	8-759-486-23	IC MBM29F200TA-70PFTN-1	
IC53	8-759-464-37	IC MAX233ACWP	
IC54	8-759-526-29	IC TC554161FTL-70V	
IC55	8-759-518-38	IC PST572CMT	
		<RESISTOR>	
R1	1-216-097-91	RES, CHIP 100K 5% 1/10W	
R2	1-216-121-91	RES, CHIP 1M 5% 1/10W	
R3	1-216-121-91	RES, CHIP 1M 5% 1/10W	
R4	1-216-065-91	RES, CHIP 4.7K 5% 1/10W	
R5	1-216-065-91	RES, CHIP 4.7K 5% 1/10W	
R6	1-216-049-91	RES, CHIP 1K 5% 1/10W	
R7	1-216-049-91	RES, CHIP 1K 5% 1/10W	
R8	1-216-121-91	RES, CHIP 1M 5% 1/10W	
R9	1-216-097-91	RES, CHIP 100K 5% 1/10W	
R10	1-216-075-00	RES, CHIP 12K 5% 1/10W	
R11	1-216-678-11	METAL CHIP 13K 0.50% 1/10W	
R12	1-216-013-00	RES, CHIP 33 5% 1/10W	
R13	1-216-097-91	RES, CHIP 100K 5% 1/10W	
R14	1-216-097-91	RES, CHIP 100K 5% 1/10W	
R15	1-216-097-91	RES, CHIP 100K 5% 1/10W	
R16	1-216-097-91	RES, CHIP 100K 5% 1/10W	
R17	1-216-097-91	RES, CHIP 100K 5% 1/10W	
R18	1-216-097-91	RES, CHIP 100K 5% 1/10W	
R19	1-216-097-91	RES, CHIP 100K 5% 1/10W	
R20	1-216-097-91	RES, CHIP 100K 5% 1/10W	
R21	1-216-097-91	RES, CHIP 100K 5% 1/10W	
R22	1-216-097-91	RES, CHIP 100K 5% 1/10W	
R23	1-216-097-91	RES, CHIP 100K 5% 1/10W	
R24	1-216-097-91	RES, CHIP 100K 5% 1/10W	
R25	1-216-097-91	RES, CHIP 100K 5% 1/10W	
R26	1-216-097-91	RES, CHIP 100K 5% 1/10W	
R27	1-216-097-91	RES, CHIP 100K 5% 1/10W	
R28	1-216-097-91	RES, CHIP 100K 5% 1/10W	
R29	1-216-097-91	RES, CHIP 100K 5% 1/10W	
R30	1-216-097-91	RES, CHIP 100K 5% 1/10W	

Rf.NO.	PART NO.	DESCRIPTION			REMARK
R31	1-216-097-91	RES, CHIP	100K	5%	1/10W
R32	1-216-097-91	RES, CHIP	100K	5%	1/10W
R33	1-216-097-91	RES, CHIP	100K	5%	1/10W
R34	1-216-097-91	RES, CHIP	100K	5%	1/10W
R35	1-216-097-91	RES, CHIP	100K	5%	1/10W
R36	1-216-097-91	RES, CHIP	100K	5%	1/10W
R37	1-216-097-91	RES, CHIP	100K	5%	1/10W
R38	1-216-097-91	RES, CHIP	100K	5%	1/10W
R39	1-216-097-91	RES, CHIP	100K	5%	1/10W
R40	1-216-097-91	RES, CHIP	100K	5%	1/10W
R41	1-216-097-91	RES, CHIP	100K	5%	1/10W
R42	1-216-097-91	RES, CHIP	100K	5%	1/10W
R43	1-216-097-91	RES, CHIP	100K	5%	1/10W
R44	1-216-097-91	RES, CHIP	100K	5%	1/10W
R45	1-216-097-91	RES, CHIP	100K	5%	1/10W
R46	1-216-097-91	RES, CHIP	100K	5%	1/10W
R47	1-216-097-91	RES, CHIP	100K	5%	1/10W
R48	1-216-097-91	RES, CHIP	100K	5%	1/10W
R49	1-216-081-00	RES, CHIP	22K	5%	1/10W
R50	1-216-081-00	RES, CHIP	22K	5%	1/10W
R51	1-216-081-00	RES, CHIP	22K	5%	1/10W
R52	1-216-081-00	RES, CHIP	22K	5%	1/10W
R53	1-216-081-00	RES, CHIP	22K	5%	1/10W
R54	1-216-081-00	RES, CHIP	22K	5%	1/10W
R55	1-216-081-00	RES, CHIP	22K	5%	1/10W
R56	1-216-097-91	RES, CHIP	100K	5%	1/10W
R57	1-216-097-91	RES, CHIP	100K	5%	1/10W
R58	1-216-097-91	RES, CHIP	100K	5%	1/10W
R59	1-216-097-91	RES, CHIP	100K	5%	1/10W
R60	1-216-097-91	RES, CHIP	100K	5%	1/10W
R61	1-216-097-91	RES, CHIP	100K	5%	1/10W
R62	1-216-097-91	RES, CHIP	100K	5%	1/10W
R63	1-216-097-91	RES, CHIP	100K	5%	1/10W
R64	1-216-097-91	RES, CHIP	100K	5%	1/10W
R65	1-216-097-91	RES, CHIP	100K	5%	1/10W
R66	1-216-097-91	RES, CHIP	100K	5%	1/10W
R67	1-216-097-91	RES, CHIP	100K	5%	1/10W
R68	1-216-097-91	RES, CHIP	100K	5%	1/10W
R69	1-216-097-91	RES, CHIP	100K	5%	1/10W
R70	1-216-097-91	RES, CHIP	100K	5%	1/10W
R71	1-216-097-91	RES, CHIP	100K	5%	1/10W

<VARIABLE RESISTOR>

RV1	1-223-442-11	RES, ADJ, METAL FILM 100K (CONTRAST CONTROL)

<CRYSTAL>

X1	1-781-014-11	VIBRATOR, CRYSTAL (18.75MHz)
X2	1-781-013-11	VIBRATOR, CRYSTAL (18.88MHz)
X3	1-767-559-11	VIBRATOR, CRYSTAL (19.660MHz)

****

MISCELLANEOUS
****

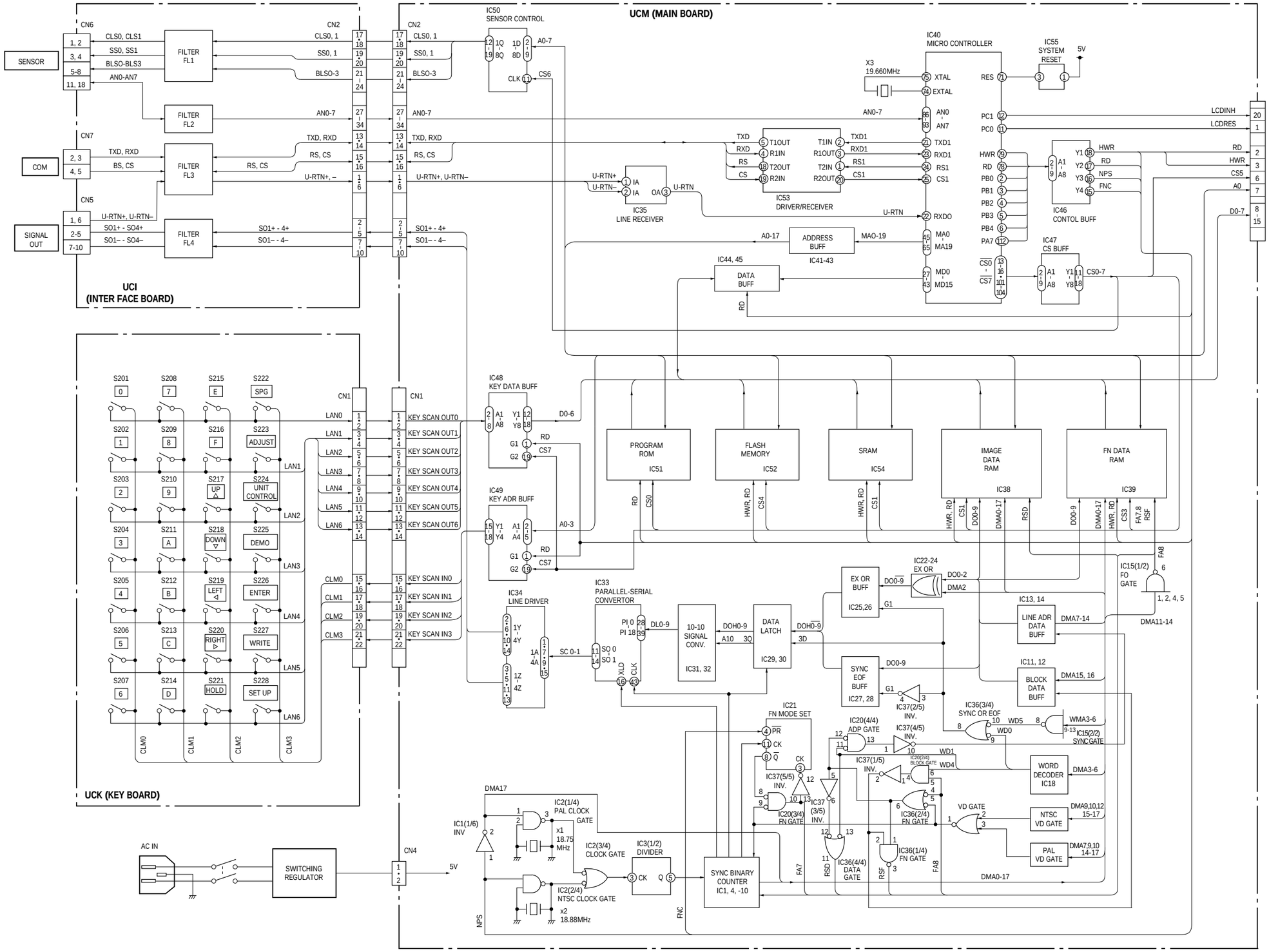
⚠	1-251-148-11	INLET, AC (WITH FILTER)
⚠	1-468-326-11	SUPPLY, SWITCHING POWER
⚠	1-570-117-51	SWITCH, SEESAW (AC POWER)
	1-691-364-21	CONNECTOR, FFC/FPC (ZIF) 26P

****

ACCESSORIES & PACKING MATERIALS
****

⚠	1-534-754-15	CORD, POWER (120V/7A) (JAPAN)
⚠	1-534-827-14	CORD, POWER (125V/10A) (US/CND)
⚠	1-551-631-15	CORD, POWER (250V/10A) (AEP)
*	1-783-893-11	CABLE
*	1-783-951-11	CABLE
	3-864-807-01	MANUAL, INSTRUCTION (JAPANESE)
	3-864-807-11	MANUAL, INSTRUCTION (ENGLISH)
	3-864-807-21	MANUAL, INSTRUCTION (GERMAN)
	3-864-807-31	MANUAL, INSTRUCTION (FRENCH)
	3-864-807-41	MANUAL, INSTRUCTION (SPANISH)
	3-864-807-51	MANUAL, INSTRUCTION (ITALIAN)

SECTION 8
BLOCK DIAGRAM



SECTION 9
DIAGRAMS

9-1. SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS

Note:

- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics.
- All electrolytics are in 50 V unless otherwise specified.
- All resistors are in ohms, 1/4 W in resistance, 1/10W in chip resistance.
  kΩ = 1000 Ω, MΩ = 1000k Ω
- : nonflammable resistor.
- : fusible resistor.
- △ : internal component.
- ▭ : panel dsignation and adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Voltage value is the reference value between it and the earth, when signal is received from JME-UA200 (digital multi-meter used : 10 M ohms/V DC).
- Unit of voltage values is V (volt).

Reference information

RESISTOR	RN	: METAL FILM
	RC	: SOLID
	FPRD	: NONFRAMMABLE CARBON
	FUSE	: NONFLAMMABLE FUSIBLE
	RS	: NONFLAMMABLE METAL OXIDE
	RB	: NONFLAMMABLE CEMENT
	RW	: NONFLAMMABLE WIREWOUND
	※	: ADJUSTMENT RESISTOR
COIL	LF-8L	: MICRO INDUCTOR
CAPACITOR	TA	: TANTALUM
	PS	: STYROL
	PP	: POLYPROPYLENE
	PT	: MYLAR
	MPS	: METALIZED POLYESTER
	MPP	: METALIZED POLYPROPYLENE
	ALB	: BIPOLAR
	ALT	: HIGH TEMPERATURE
	ALR	: HIGH RIPPLE

The components identified ⚠ marked are critical for safety.
Replace only with the part number specified.

Les composants identifiés par la marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

- ケミタン，タンタルを除くコンデンサで耐圧50 V以下のものは，その耐圧を省略。単位はすべてµF（pはpF）
- ケミコン，タンタルのコンデンサで耐圧50Vは省略。
- 抵抗で指示のないものは1/4 W，チップ抵抗は1/10 Wです。
  単位は全てΩ。k Ω = 1000 Ω，M Ω = 1000 kΩ
- 印はヒューズ抵抗。
- 印は不燃性抵抗。
- △ 印は内蔵部品。
- ▭ 印はパネル表示および調整名称。
- 半固定抵抗および可変抵抗器の特性カーブ（B）は省略。

－部品特性省略表－

- 固定抵抗

RN	：金属被膜
RC	：ソリッド
FPRD	：不燃性カーボン
FUSE	：不燃性ヒューズ
RS	：不燃性酸化金属被膜
RB	：不燃性セメント
RW	：不燃性巻線
※	：調整抵抗

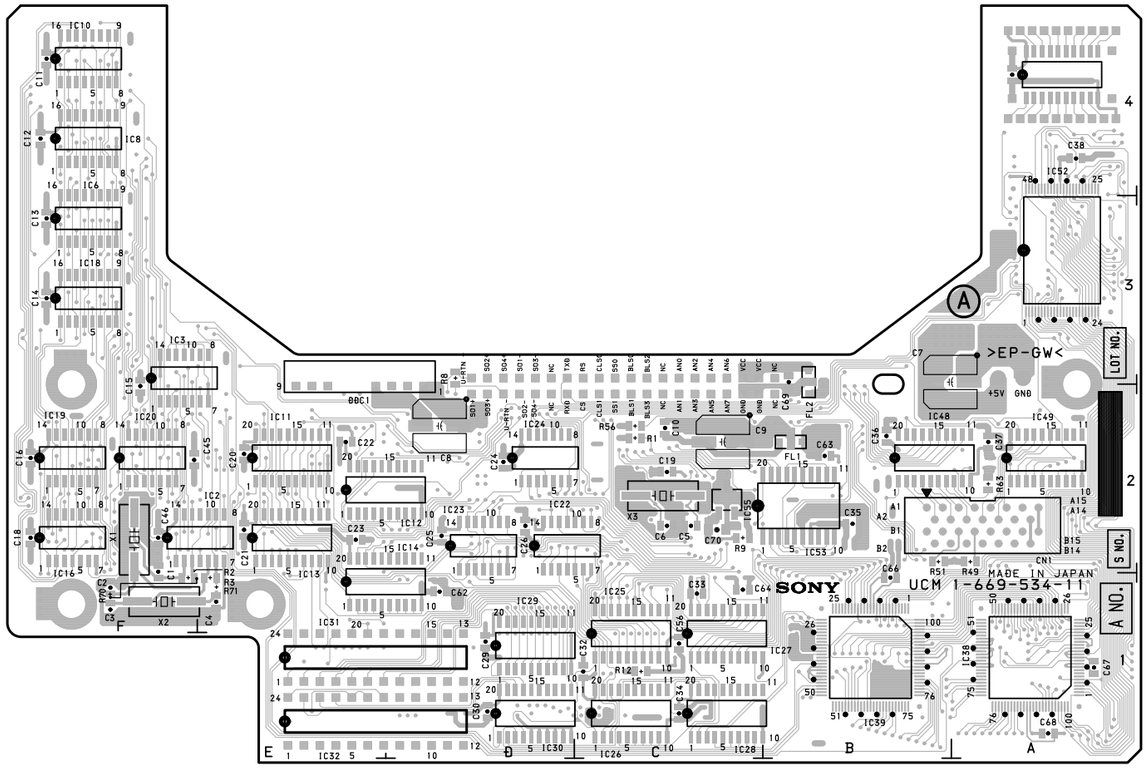
- マイクロインダクタ

  LF−8B ：マイクロインダクタ

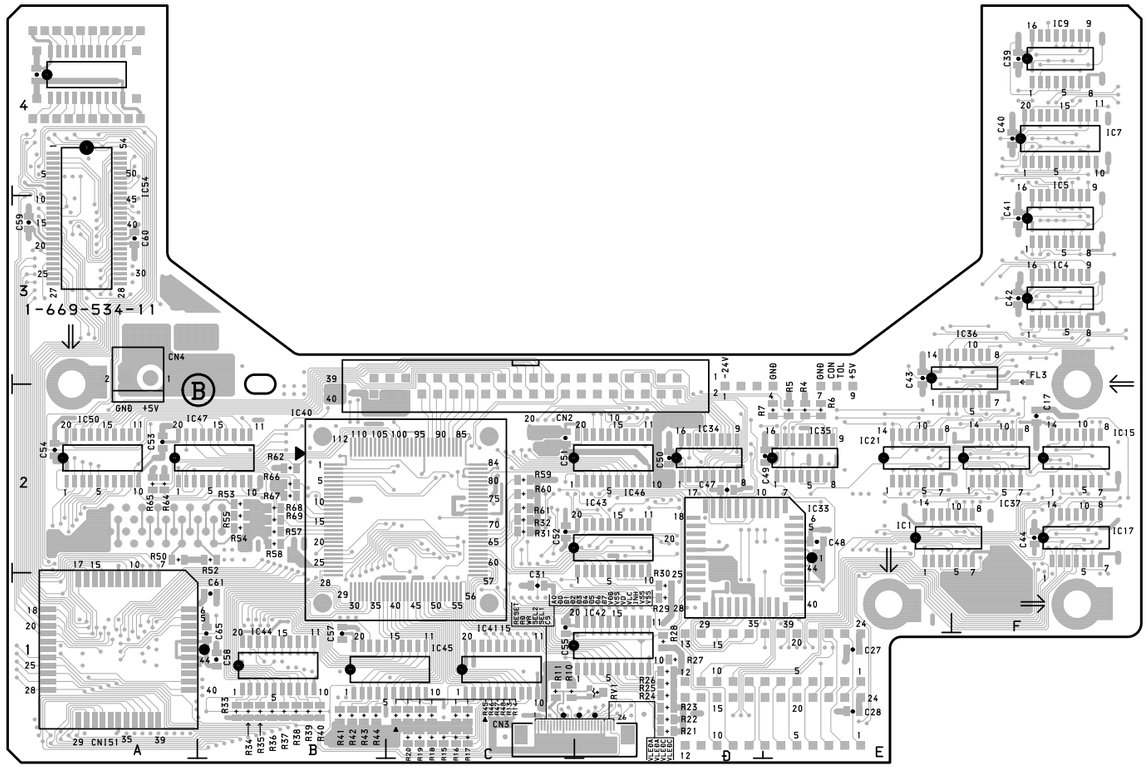
- コンデンサ

TA	：タンタル
PS	：スチロール
PP	：ポリプロピレン
PT	：マイラ
MPS	：メタライズドポリエステル
MPP	：メタライズドポリプロピレン
ALB	：バイポーラ
ALT	：高温用
ALR	：ハイリップル

⚠印の部品は，安全性を維持するために，重要な部品です。
従って交換時は，必ず指定の部品を使用して下さい。



UCM – A SIDE –
SUFFIX: -11

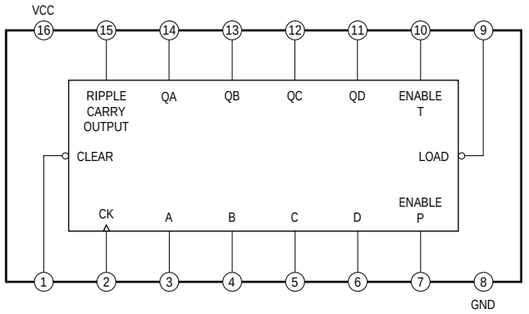


UCM – B SIDE –
SUFFIX: -11

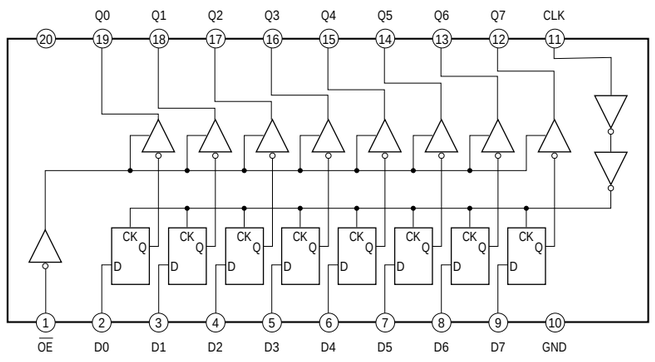
UCM BOARD
*: B SIDE

IC1	*E-2	IC21	*E-2	IC41	*C-1
IC2	E-2	IC22	D-2	IC42	*D-1
IC3	F-3	IC23	D-2	IC43	*D-2
IC4	*F-3	IC24	D-2	IC44	*B-1
IC5	*F-3	IC25	C-1	IC45	*C-1
IC6	F-3	IC26	C-1	IC46	*D-2
IC7	*F-4	IC27	C-1	IC47	*B-2
IC8	F-4	IC28	C-1	IC48	B-2
IC9	*F-4	IC29	D-1	IC49	A-2
IC10	F-4	IC30	D-1	IC50	*A-2
IC11	E-2	IC31	E-1	IC51	*A-1
IC12	D-2	IC32	E-1	IC52	A-3
IC13	E-2	IC33	*D-2	IC53	B-2
IC14	D-1	IC34	*D-2	IC54	*A-3
IC15	*F-2	IC35	*E-2	IC55	C-2
IC16	F-2	IC36	*F-3		
IC17	*F-2	IC37	*F-2	RV1	*D-1
IC18	F-3	IC38	A-1		
IC19	F-2	IC39	B-1		
IC20	F-2	IC40	*C-2		

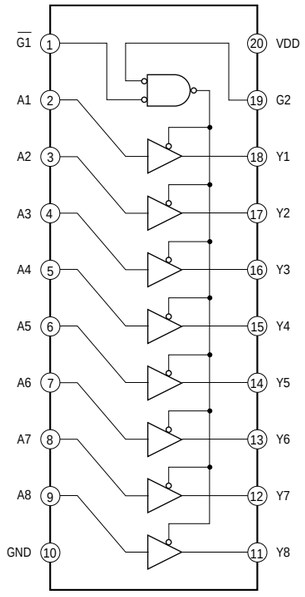
UCM-P1 BOARD IC4-6, 10 TC74AC161F



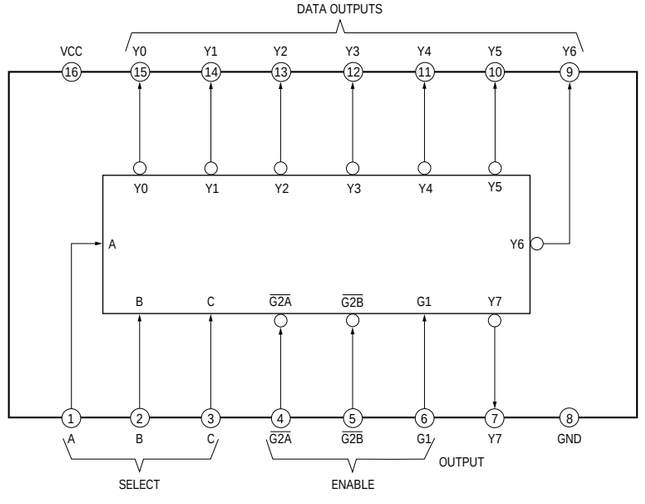
UCM-P1, P2, P4 BOARDS IC7, 29, 30, 50 TC74AC574F

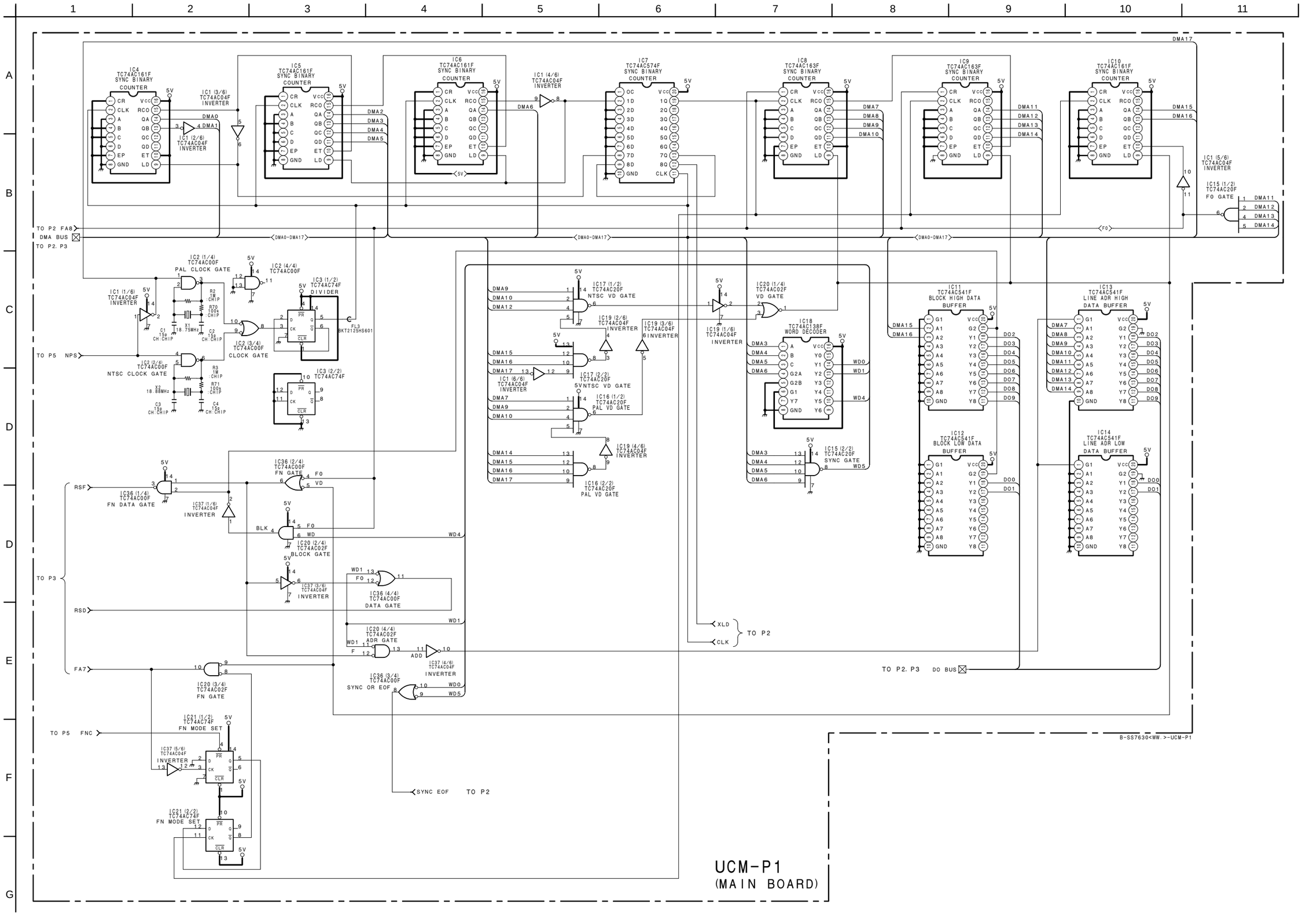


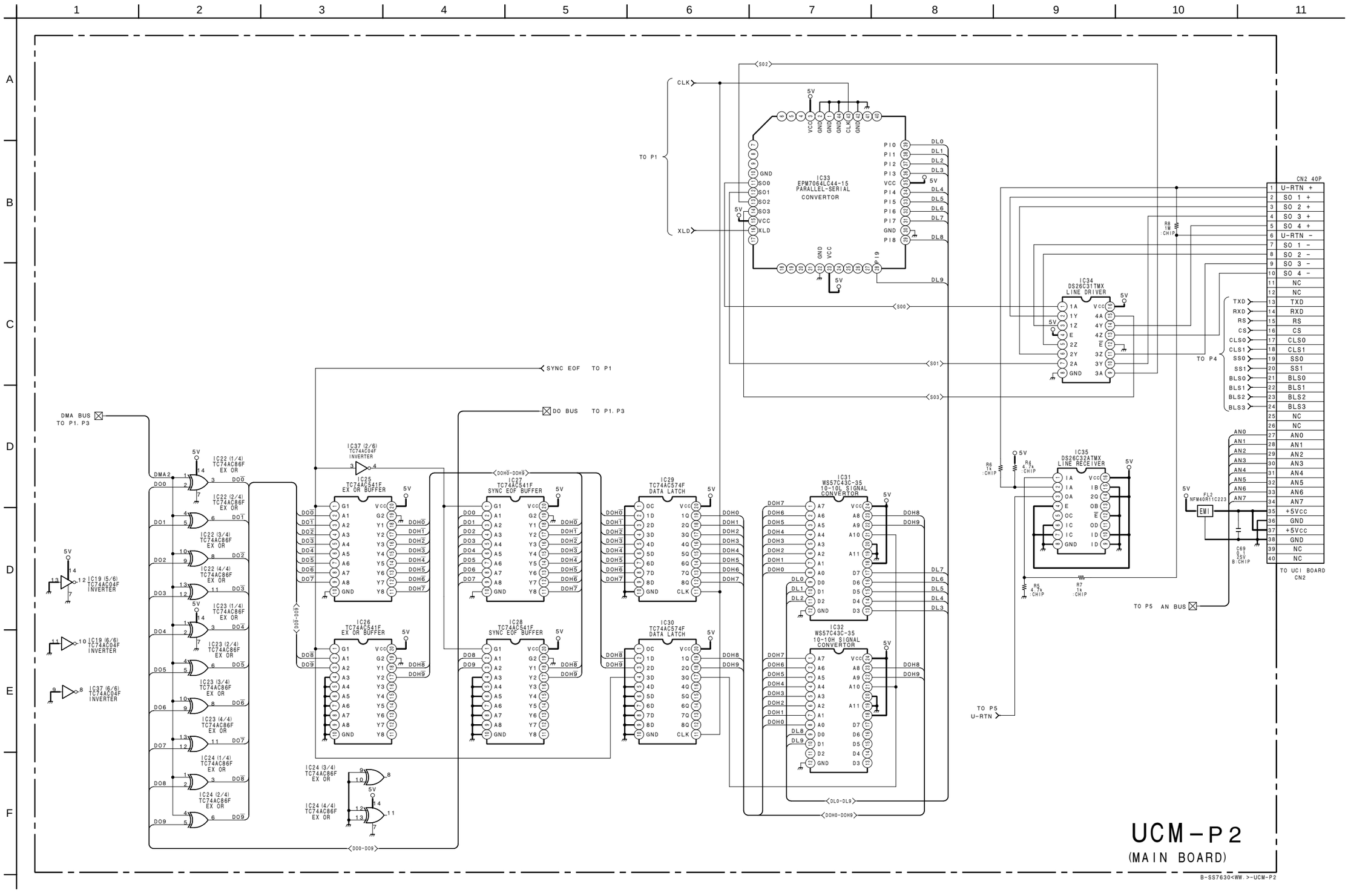
UCM-P1, P2, P4, P5 BOARDS IC11-14, 25-28, 41-43, 46-49 TC74AC541F

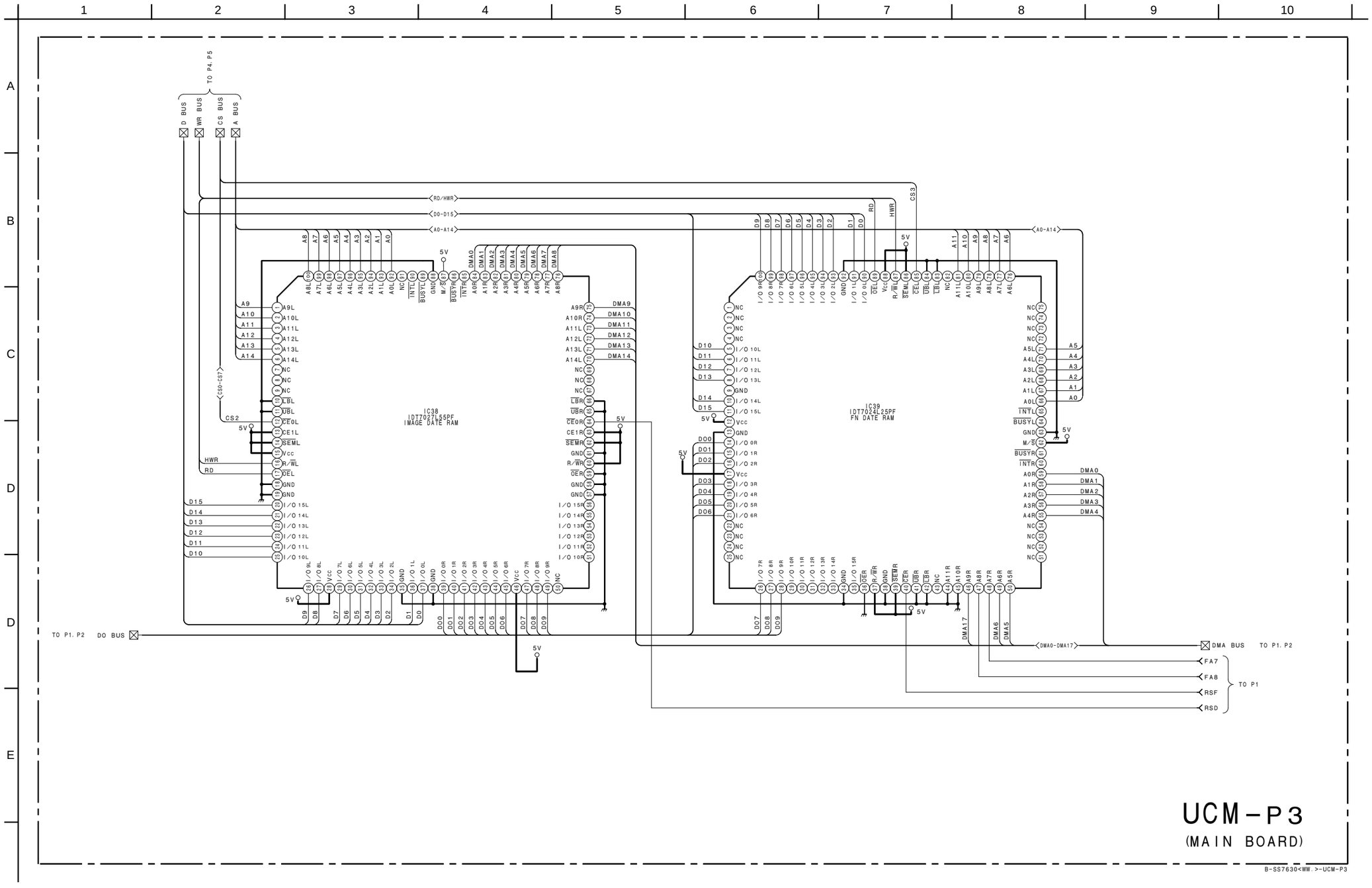


UCM-P1 BOARD IC18 TC74AC138F



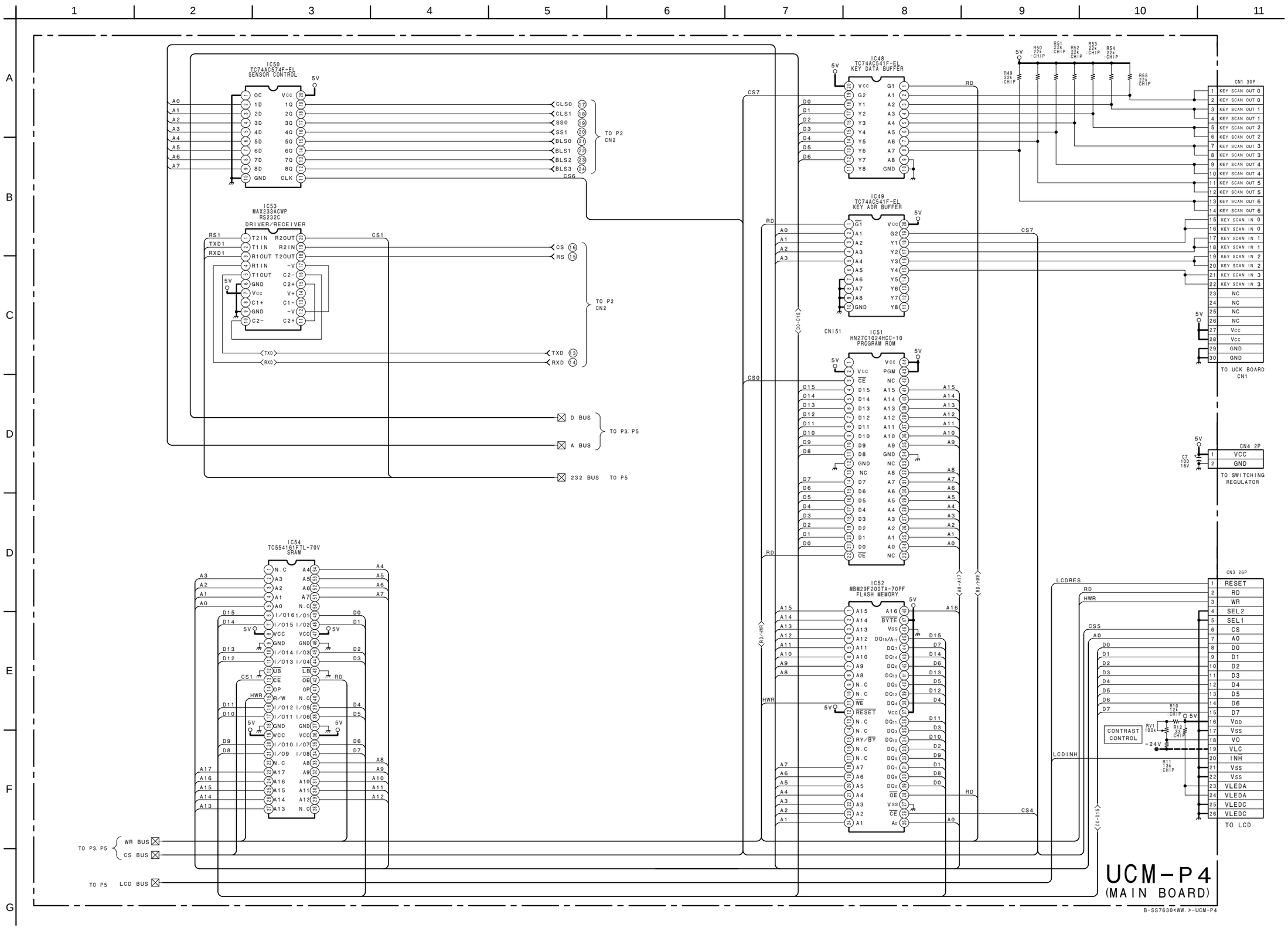

1 2 3 4 5 6 7 8 9 10 11
A B C D E F G
IC4 TC74AC161F SYNC BINARY COUNTER
IC5 TC74AC161F SYNC BINARY COUNTER
IC6 TC74AC161F SYNC BINARY COUNTER
IC7 TC74AC574F SYNC BINARY COUNTER
IC8 TC74AC163F SYNC BINARY COUNTER
IC9 TC74AC163F SYNC BINARY COUNTER
IC10 TC74AC161F SYNC BINARY COUNTER
IC1 (3/6) TC74AC04F INVERTER
IC1 (2/6) TC74AC04F INVERTER
IC1 (4/6) TC74AC04F INVERTER
IC1 (5/6) TC74AC04F INVERTER
IC15 (1/2) TC74AC20F F0 GATE
DMA0
DMA1
DMA2
DMA3
DMA4
DMA5
DMA6
DMA7
DMA8
DMA9
DMA10
DMA11
DMA12
DMA13
DMA14
DMA15
DMA16
DMA17
TO P2 FA8
DMA BUS
TO P2. P3
DMA0-DMA17
F0
IC2 (1/4) TC74AC00F PAL CLOCK GATE
IC2 (4/4) TC74AC00F
IC3 (1/2) TC74AC74F DIVIDER
IC1 (1/6) TC74AC04F INVERTER
IC2 (2/4) TC74AC00F NTSC CLOCK GATE
IC2 (3/4) TC74AC00F CLOCK GATE
IC3 (2/2) TC74AC74F
TO P5 NPS
X1 18.75MHz
X2 18.88MHz
FL3 BKT2125HS601
IC17 (1/2) TC74AC20F NTSC VD GATE
IC19 (2/6) TC74AC04F INVERTER
IC17 (2/2) TC74AC20F NTSC VD GATE
IC16 (1/2) TC74AC20F PAL VD GATE
IC19 (4/6) TC74AC04F INVERTER
IC16 (2/2) TC74AC20F PAL VD GATE
IC19 (3/6) TC74AC04F INVERTER
IC19 (1/6) TC74AC04F INVERTER
IC20 (1/4) TC74AC02F VD GATE
IC18 TC74AC138F WORD DECODER
WD0
WD1
WD4
IC15 (2/2) TC74AC20F SYNC GATE
WD5
IC11 TC74AC541F BLOCK HIGH DATA BUFFER
IC12 TC74AC541F BLOCK LOW DATA BUFFER
IC13 TC74AC541F LINE ADR HIGH DATA BUFFER
IC14 TC74AC541F LINE ADR LOW DATA BUFFER
DO0
DO1
DO2
DO3
DO4
DO5
DO6
DO7
DO8
DO9
TO P2. P3 DO BUS
XLD
CLK
TO P2
IC36 (2/4) TC74AC00F FN GATE
IC36 (1/4) TC74AC00F FN DATA GATE
IC37 (1/6) TC74AC04F INVERTER
IC20 (2/4) TC74AC02F BLOCK GATE
IC37 (3/6) TC74AC04F INVERTER
IC36 (4/4) TC74AC00F DATA GATE
IC20 (4/4) TC74AC02F ADR GATE
IC37 (4/6) TC74AC04F INVERTER
IC36 (3/4) TC74AC00F SYNC OR EOF
IC20 (3/4) TC74AC02F FN GATE
RSF
RSD
FA7
TO P3
BLK
WD
VD
ADD
SYNC EOF
TO P2
IC21 (1/2) TC74AC74F FN MODE SET
IC37 (5/6) TC74AC04F INVERTER
IC21 (2/2) TC74AC74F FN MODE SET
TO P5 FNC
B-SS7630<WW.>-UCM-P1
UCM-P1
(MAIN BOARD)

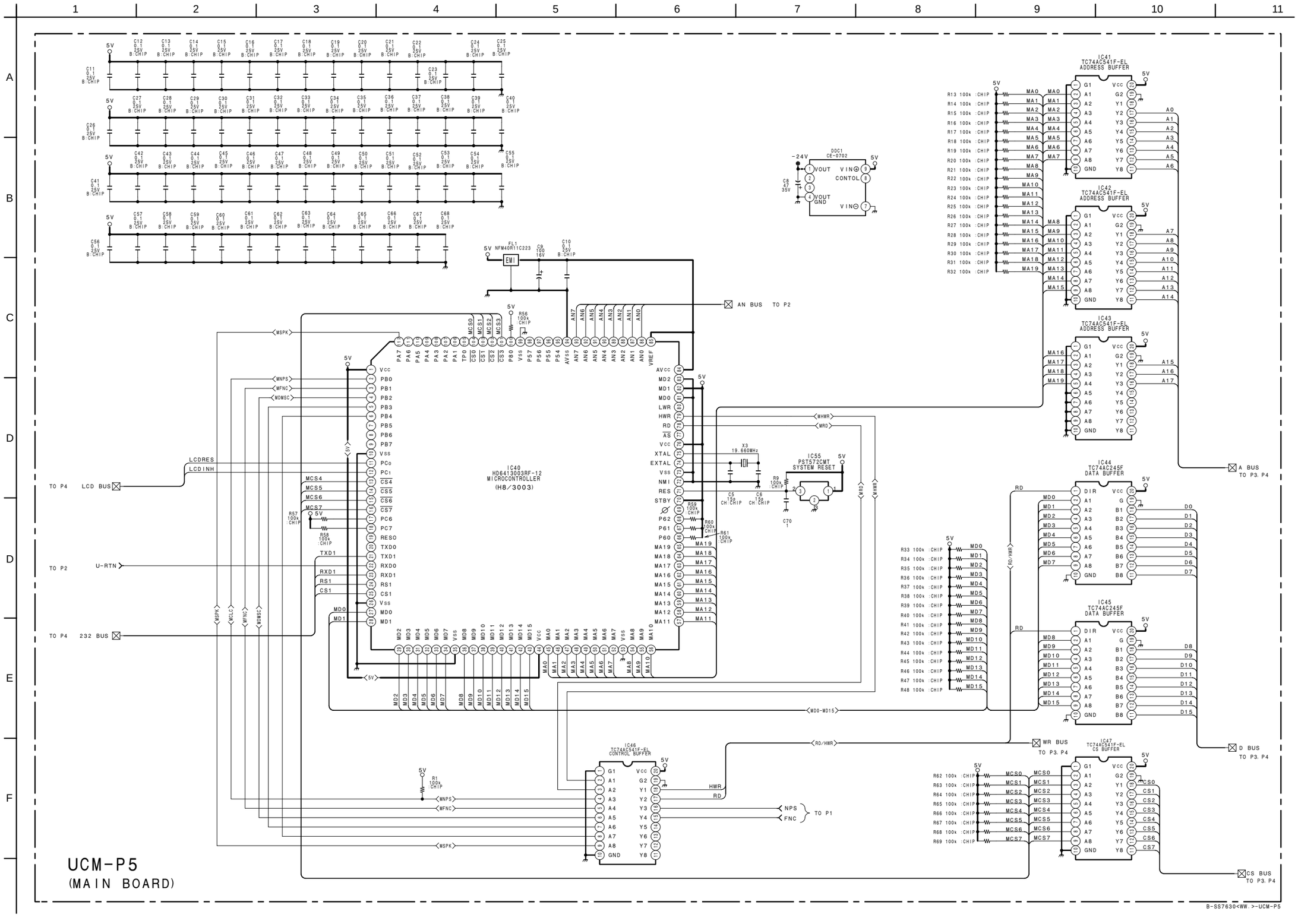

UCM-P2
(MAIN BOARD)
B-SS7630<WW.>-UCM-P2
IC33 EPM7064LC44-15 PARALLEL-SERIAL CONVERTOR
IC34 DS26C31TMX LINE DRIVER
IC35 DS26C32ATMX LINE RECEIVER
IC31 WS57C43C-35 10-10L SIGNAL CONVERTOR
IC32 WS57C43C-35 10-10H SIGNAL CONVERTOR
IC22 (1/4) TC74AC86F EX OR
IC22 (2/4) TC74AC86F EX OR
IC22 (3/4) TC74AC86F EX OR
IC22 (4/4) TC74AC86F EX OR
IC23 (1/4) TC74AC86F EX OR
IC23 (2/4) TC74AC86F EX OR
IC23 (3/4) TC74AC86F EX OR
IC23 (4/4) TC74AC86F EX OR
IC24 (1/4) TC74AC86F EX OR
IC24 (2/4) TC74AC86F EX OR
IC24 (3/4) TC74AC86F EX OR
IC24 (4/4) TC74AC86F EX OR
IC19 (5/6) TC74AC04F INVERTER
IC19 (6/6) TC74AC04F INVERTER
IC37 (2/6) TC74AC04F INVERTER
IC37 (6/6) TC74AC04F INVERTER
IC25 TC74AC541F EX OR BUFFER
IC26 TC74AC541F EX OR BUFFER
IC27 TC74AC541F SYNC EOF BUFFER
IC28 TC74AC541F SYNC EOF BUFFER
IC29 TC74AC574F DATA LATCH
IC30 TC74AC574F DATA LATCH
CN2 40P
TO P1
TO P4
TO P5 AN BUS
TO P5 U-RTN
TO UCI BOARD CN2
SYNC EOF TO P1
DO BUS TO P1. P3
DMA BUS TO P1. P3

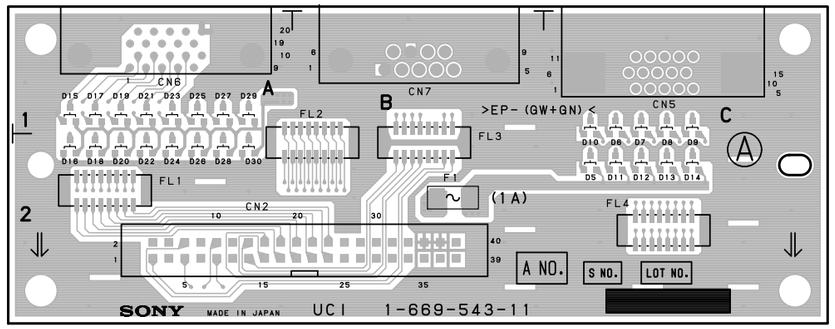


UCM-P3
(MAIN BOARD)

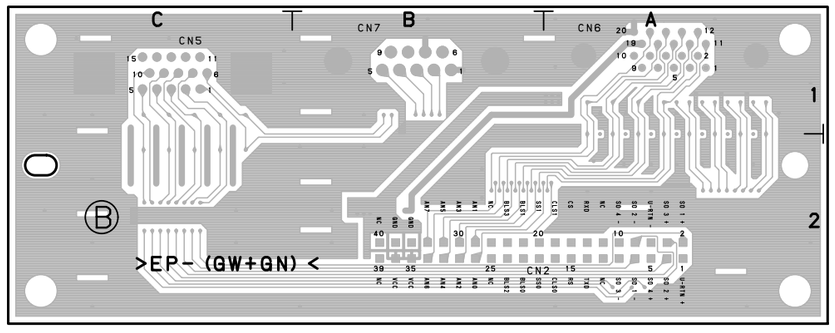
B-SS7630<WW.>-UCM-P3


IC50
TC74AC574F-EL
SENSOR CONTROL
IC53
MAX233ACWP
RS232C
DRIVER/RECEIVER
IC54
TC55416IFTL-70V
SRAM
IC48
TC74AC541F-EL
KEY DATA BUFFER
IC49
TC74AC541F-EL
KEY ADR BUFFER
IC51
HN27C1024HCC-10
PROGRAM ROM
IC52
MBM29F200TA-70PF
FLASH MEMORY
CN1 30P
KEY SCAN OUT 0
KEY SCAN OUT 1
KEY SCAN OUT 2
KEY SCAN OUT 3
KEY SCAN OUT 4
KEY SCAN OUT 5
KEY SCAN OUT 6
KEY SCAN IN 0
KEY SCAN IN 1
KEY SCAN IN 2
KEY SCAN IN 3
NC
Vcc
GND
TO UCK BOARD CN1
CN4 2P
VCC
GND
TO SWITCHING REGULATOR
CN3 26P
RESET
RD
WR
SEL2
SEL1
CS
A0
D0
D1
D2
D3
D4
D5
D6
D7
VDD
Vss
VO
VLC
INH
Vss
Vss
VLEDA
VLEDA
VLEDC
VLEDC
TO LCD
CONTRAST CONTROL
TO P2 CN2
TO P3. P5
TO P5
D BUS
A BUS
232 BUS
WR BUS
CS BUS
LCD BUS
UCM-P4
(MAIN BOARD)
B-SS7630<WW.>-UCM-P4

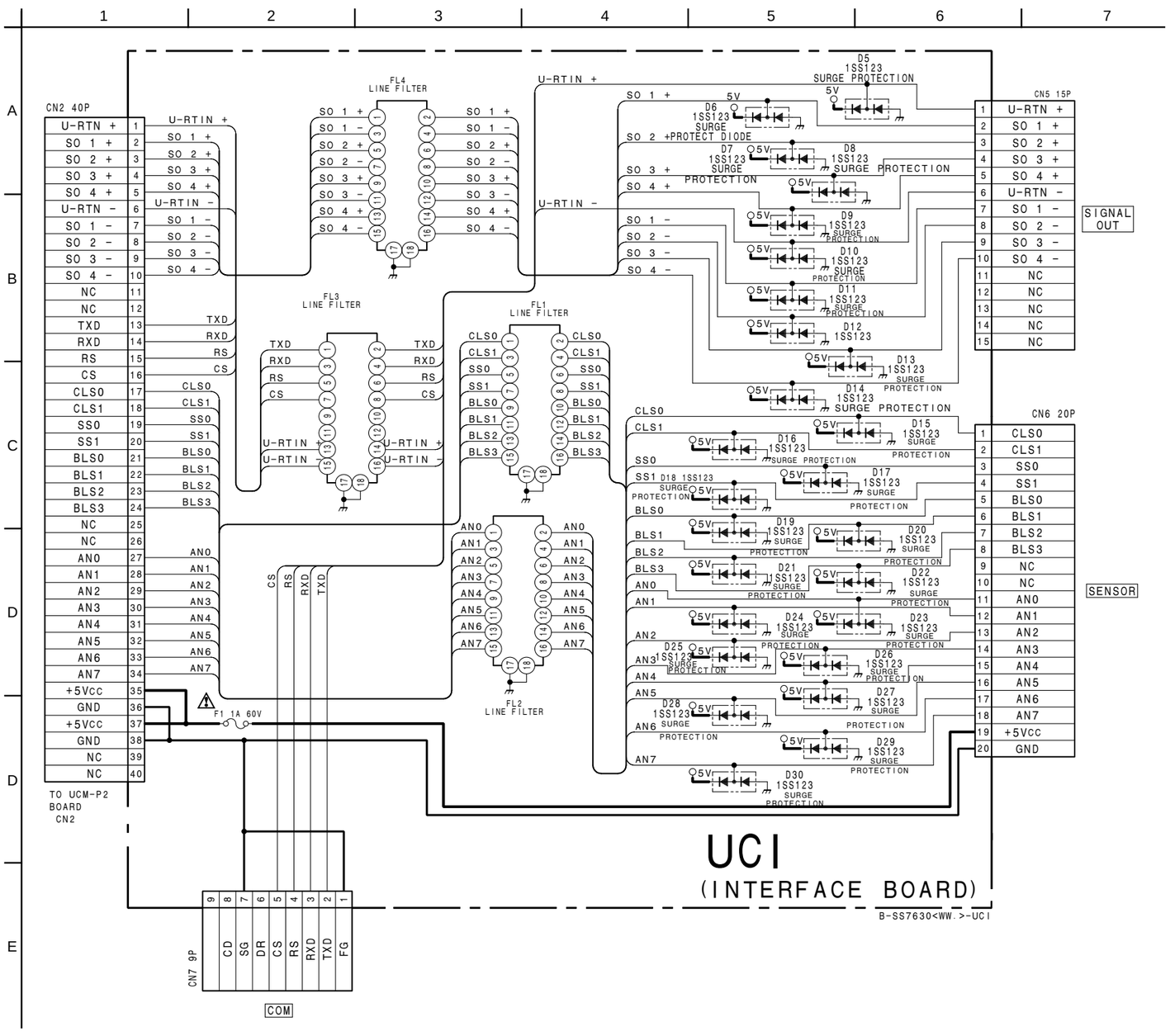

UCM-P5
(MAIN BOARD)
IC40
HD6413003RF-12
MICROCONTROLLER
(H8/3003)
IC41
TC74AC541F-EL
ADDRESS BUFFER
IC42
TC74AC541F-EL
ADDRESS BUFFER
IC43
TC74AC541F-EL
ADDRESS BUFFER
IC44
TC74AC245F
DATA BUFFER
IC45
TC74AC245F
DATA BUFFER
IC46
TC74AC541F-EL
CONTROL BUFFER
IC47
TC74AC541F-EL
CS BUFFER
IC55
PST572CMT
SYSTEM RESET
DDC1
CE-0702
FL1
NFM40R11C223
X3
19.660MHz
AN BUS TO P2
A BUS TO P3. P4
D BUS TO P3. P4
WR BUS TO P3. P4
CS BUS TO P3. P4
LCD BUS
232 BUS
U-RTN
NPS
FNC
TO P1
MD0-MD15
RD/HWR
B-SS7630<WW.>-UCM-P5

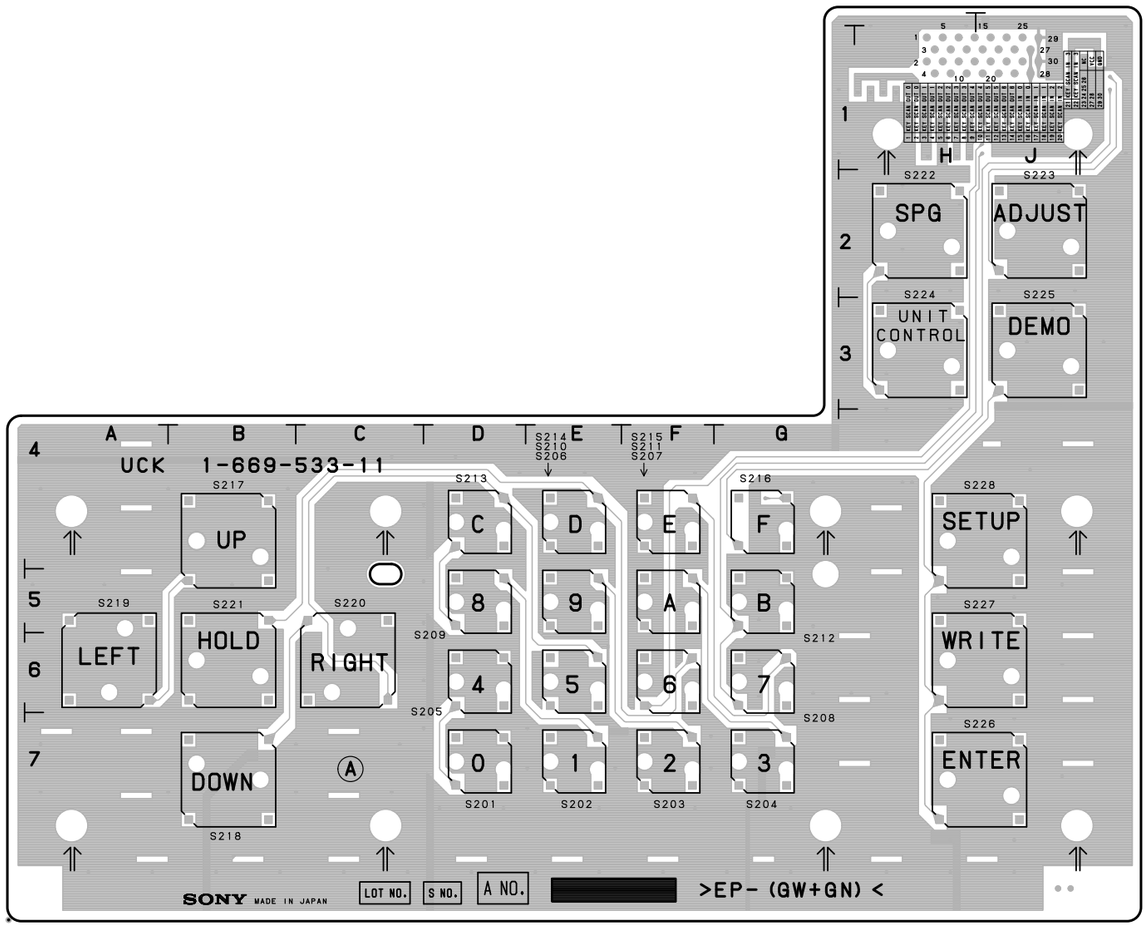


UCI – A SIDE –
SUFFIX: -11

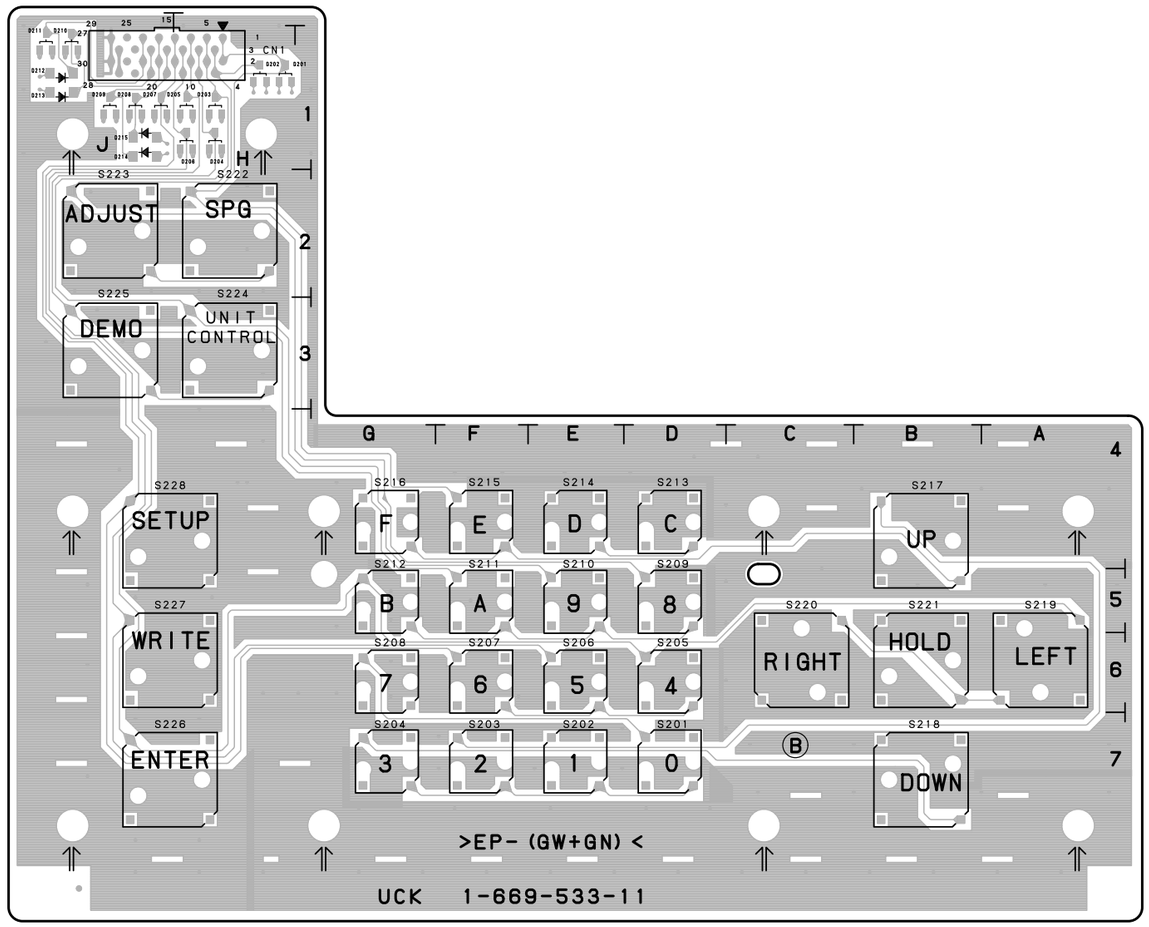


UCI – B SIDE –
SUFFIX: -11

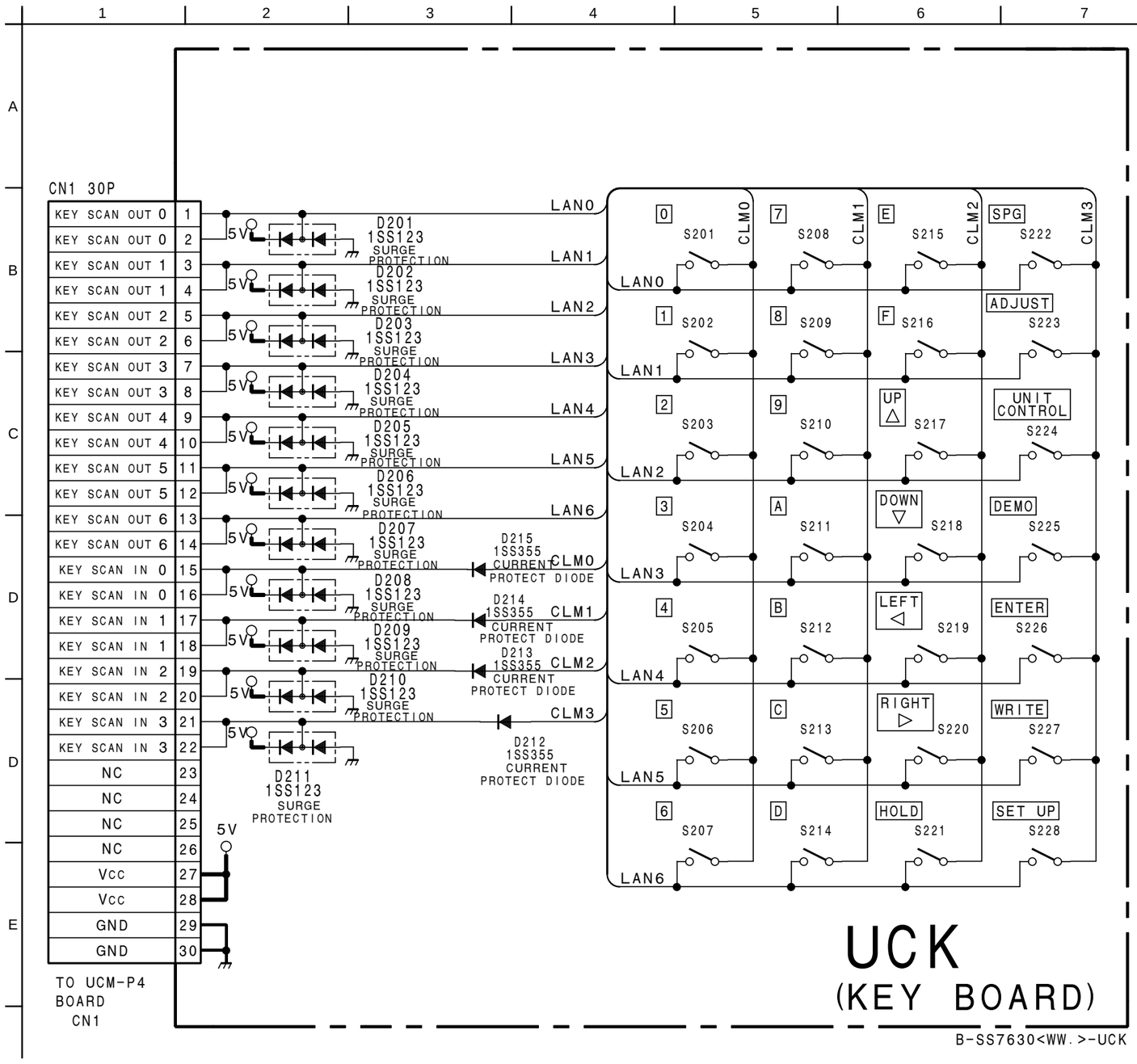




UCK – A SIDE –
SUFFIX: -11



UCK – B SIDE –
SUFFIX: -11


CN1 30P
KEY SCAN OUT 0 1
KEY SCAN OUT 0 2
KEY SCAN OUT 1 3
KEY SCAN OUT 1 4
KEY SCAN OUT 2 5
KEY SCAN OUT 2 6
KEY SCAN OUT 3 7
KEY SCAN OUT 3 8
KEY SCAN OUT 4 9
KEY SCAN OUT 4 10
KEY SCAN OUT 5 11
KEY SCAN OUT 5 12
KEY SCAN OUT 6 13
KEY SCAN OUT 6 14
KEY SCAN IN 0 15
KEY SCAN IN 0 16
KEY SCAN IN 1 17
KEY SCAN IN 1 18
KEY SCAN IN 2 19
KEY SCAN IN 2 20
KEY SCAN IN 3 21
KEY SCAN IN 3 22
NC 23
NC 24
NC 25
NC 26
Vcc 27
Vcc 28
GND 29
GND 30
TO UCM-P4 BOARD CN1
5V
D201 1SS123 SURGE PROTECTION
D202 1SS123 SURGE PROTECTION
D203 1SS123 SURGE PROTECTION
D204 1SS123 SURGE PROTECTION
D205 1SS123 SURGE PROTECTION
D206 1SS123 SURGE PROTECTION
D207 1SS123 SURGE PROTECTION
D208 1SS123 SURGE PROTECTION
D209 1SS123 SURGE PROTECTION
D210 1SS123 SURGE PROTECTION
D211 1SS123 SURGE PROTECTION
D215 1SS355 CURRENT PROTECT DIODE
D214 1SS355 CURRENT PROTECT DIODE
D213 1SS355 CURRENT PROTECT DIODE
D212 1SS355 CURRENT PROTECT DIODE
LAN0
LAN1
LAN2
LAN3
LAN4
LAN5
LAN6
CLM0
CLM1
CLM2
CLM3
0 S201
7 S208
E S215
SPG S222
1 S202
8 S209
F S216
ADJUST S223
2 S203
9 S210
UP △ S217
UNIT CONTROL S224
3 S204
A S211
DOWN ▽ S218
DEMO S225
4 S205
B S212
LEFT ◁ S219
ENTER S226
5 S206
C S213
RIGHT ▷ S220
WRITE S227
6 S207
D S214
HOLD S221
SET UP S228
UCK
(KEY BOARD)
B-SS7630<WW.>-UCK

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